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6/11/24
SEARCH REQUEST FORMExaminer # (Mandatory): 79046 Requester's Full Name: Preeti KumarArt Unit 1751 Location (Bldg/Room#): CP3 9D03 Phone (circle) 305 306 308 0178Serial Number: 09/889, 253 Results Format Preferred (circle): PAPER DISK E-MAILTitle of Invention Detergent Compositions comprising a perborate, hydrosol, and
bleach system.Inventors (please provide full names): Please See Bib SheetEarliest Priority Date: 01/14/99

Keywords (include any known synonyms, registry numbers, explanation of initialisms):

Please See Claims.Thank you.

Search Topic:

Please write detailed statement of the search topic, and the concept of the invention. Describe as specifically as possible the subject matter to be searched. Define any terms that may have a special meaning. Give examples of relevant citations, authors, etc., if known. You may include a copy of the abstract and the broadcast or most relevant claim(s).

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Number of Databases: _____

Type of Search

 N.A. Sequence A.A. Sequence Structure (#) Bibliographic Litigation Fulltext Procurement Other

Vendors (include cost where applicable)

 STN Questel/Orbit Lexis/Nexis WWW/Internet In-house sequence systems (list) Dialog Dr. Link Westlaw Other (specify)

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FILE COVERS 1907 - 4 Mar 2002 VOL 136 ISS 10
 FILE LAST UPDATED: 3 Mar 2002 (20020303/ED)

This file contains CAS Registry Numbers for easy and accurate substance identification.

CAS roles have been modified effective December 16, 2001. Please check your SDI profiles to see if they need to be revised. For information on CAS roles, enter HELP ROLES at an arrow prompt or use the CAS Roles thesaurus (/RL field) in this file.

The P indicator for Preparations was not generated for all of the CAS Registry Numbers that were added to the CAS files between 12/27/01 and 1/23/02. As of 1/23/02, the situation has been resolved. Searches and/or SDIs in the H/Z/CA/CAplus files incorporating CAS Registry Numbers with the P indicator executed between 12/27/01 and 1/23/02 may be incomplete. See the NEWS message on this topic for more information.

=> D QUE L35

L17	18 SEA FILE=REGISTRY ABB=ON (9015-75-2/BI OR 10484-48-7/BI OR 105-74-8/BI OR 1119-86-4/BI OR 1120-71-4/BI OR 117470-91-4/BI OR 184770-71-6/BI OR 205382-99-6/BI OR 212697-49-9/BI OR 3034-79-5/BI OR 3230-65-7/BI OR 34414-98-7/BI OR 5725-96-2/BI OR 64-04-0/BI OR 7440-48-4/BI OR 7757-82-6/BI OR 9033-35-6/BI OR 94-36-0/BI)	L17 AND LYASE
L19	2 SEA FILE=REGISTRY ABB=ON	L17 AND LYASE
L20	1 SEA FILE=REGISTRY ABB=ON	"PECTATE LYASE"/CN
L21	1 SEA FILE=REGISTRY ABB=ON	"PECTIN LYASE"/CN
L22	2 SEA FILE=REGISTRY ABB=ON	(L19 OR L20 OR L21)
L23	1766 SEA FILE=HCAPLUS ABB=ON	L22 OR (PECTIN? OR PECTATE?) (3A) LYASE?
L24	42 SEA FILE=HCAPLUS ABB=ON	L23 AND DETERGENT?
L25	36 SEA FILE=HCAPLUS ABB=ON	L23 AND DETERGENT?/SC, SX
L26	23 SEA FILE=HCAPLUS ABB=ON	(L24 OR L25) AND ?PEROX?
L27	1 SEA FILE=HCAPLUS ABB=ON	(L24 OR L25) AND (?PERACID? OR ?PERCAR?)
L28	0 SEA FILE=HCAPLUS ABB=ON	(L26 OR L27) AND METAL?(3A)BLEACH?
L29	0 SEA FILE=HCAPLUS ABB=ON	(L26 OR L27) AND (MN OR MANGANESE OR COBALT? OR CO)
L30	1 SEA FILE=HCAPLUS ABB=ON	(L26 OR L27) AND METAL?
L31	5 SEA FILE=HCAPLUS ABB=ON	(L26 OR L27) AND BLEACH?
L32	7 SEA FILE=HCAPLUS ABB=ON	(L27 OR L28 OR L29 OR L30 OR L31)
L33	6 SEA FILE=HCAPLUS ABB=ON	L32 AND DETERGENT?/SC, SX

L34 20 SEA FILE=HCAPLUS ABB=ON L26 AND DETERGENT?/SC, SX
 L35 21 SEA FILE=HCAPLUS ABB=ON L33 OR L34

=> FILE WPIX
 FILE 'WPIX' ENTERED AT 15:39:28 ON 04 MAR 2002
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FILE LAST UPDATED: 01 MAR 2002 <20020301/UP>
 MOST RECENT DERWENT UPDATE 200214 <200214/DW>
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=> D QUE L37
 L17 18 SEA FILE=REGISTRY ABB=ON (9015-75-2/BI OR 10484-48-7/BI OR
 105-74-8/BI OR 1119-86-4/BI OR 1120-71-4/BI OR 117470-91-4/BI
 OR 184770-71-6/BI OR 205382-99-6/BI OR 212697-49-9/BI OR
 3034-79-5/BI OR 3230-65-7/BI OR 34414-98-7/BI OR 5725-96-2/BI
 OR 64-04-0/BI OR 7440-48-4/BI OR 7757-82-6/BI OR 9033-35-6/BI
 OR 94-36-0/BI)
 L19 2 SEA FILE=REGISTRY ABB=ON L17 AND LYASE
 L20 1 SEA FILE=REGISTRY ABB=ON "PECTATE LYASE"/CN
 L21 1 SEA FILE=REGISTRY ABB=ON "PECTIN LYASE"/CN
 L22 2 SEA FILE=REGISTRY ABB=ON (L19 OR L20 OR L21)
 L23 1766 SEA FILE=HCAPLUS ABB=ON L22 OR (PECTIN? OR PECTATE?) (3A) LYASE?
 L36 32 SEA FILE=WPIX ABB=ON L23 AND DETERGENT?
 L37 17 SEA FILE=WPIX ABB=ON L36 AND (?PEROX? OR ?PERACID? OR
 ?PERCAR?)

=> DUP REM L35 L37
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 PROCESSING COMPLETED FOR L35
 PROCESSING COMPLETED FOR L37
 L38 31 DUP REM L35 L37 (7 DUPLICATES REMOVED)

=> D L38 ALL 1-31

L38 ANSWER 1 OF 31 HCAPLUS COPYRIGHT 2002 ACS
 AN 2002:72246 HCAPLUS
 DN 136:130769
 TI Recombinant *Bacillus pectate lyases* with improved

thermostability and their use in detergents

IN Schuelein, Martin; Glad, Sanne O. Schroder; Andersen, Carsten; Frandsen,

Torben Peter

PA Novozymes A/S, Den.

SO PCT Int. Appl., 158 pp.

CODEN: PIXXD2

DT Patent

LA English

IC ICM C12N

CC 7-2 (Enzymes)

Section cross-reference(s): 3, 46

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 2002006442	A2	20020124	WO 2001-DK505	20010717
	W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
	RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				

PRAI DK 2000-1117 A 20000719

DK 2001-705 A 20010504

DK 2001-734 A 20010510

AB A variant of a cell-wall degrading enzyme having a beta-helix structure, which variant holds at least one substituent in a position detd. by identifying all residues potentially belonging to a stack; characterizing the stack as interior or exterior; characterizing the stack as polar, hydrophobic, or arom./heteroarom. based on the dominating characteristics of the parent or wild-type enzyme stack residues and/or its orientation relative to the beta-helix (interior or exterior); optimizing all stack positions of a stack either to hydrophobic aliph. amino acids, hydrophobic arom. or polar amino acids by allowing mutations within one or all positions to amino acids belonging to one of these groups; measuring thermostability of the variants by DSC or an application-related assay such as a Pad-Steam application test; and selecting the stabilized variants is disclosed. Variants of a *Bacillus licheniformis pectate lyase* (EC 4.2.2.2) are preferred. Thus, recombinant *B. subtilis* was used to prep. M169I, F198V *pectate lyase* mutant. This mutant was denatured at 77.degree., unlike the parent enzyme which was denatured at 69.degree..

ST sequence *Bacillus pectate lyase* substitution mutant thermostability; cellulosic fiber treatment recombinant thermostable *Bacillus pectate lyase*; detergent recombinant thermostable *Bacillus pectate lyase*

IT Fibers

RL: MSC (Miscellaneous)

(cellulosic, improvement of; recombinant *Bacillus pectate lyases* with improved thermostability and their use in detergents)

IT Gene, microbial

RL: BUU (Biological use, unclassified); BIOL (Biological study); USES (Uses)

(for *pectate lyase* variants; recombinant *Bacillus pectate lyases* with improved thermostability and their use in detergents)

IT Textiles

Yarns

(improvement of; recombinant **Bacillus pectate lyases**
with improved thermostability and their use in **detergents**)

IT Molecular cloning

(of **pectate lyase** mutant genes; recombinant
Bacillus pectate lyases with improved
thermostability and their use in **detergents**)

IT Detergents

Pulping

Thermal stability

(recombinant **Bacillus pectate lyases** with improved
thermostability and their use in **detergents**)

IT Recycling

(wastepaper; recombinant **Bacillus pectate lyases**
with improved thermostability and their use in **detergents**)

IT	393200-44-7DP, derivs.	393200-45-8P	393200-46-9P	393200-47-0P	
	393200-48-1P	393200-49-2P	393200-50-5P	393200-51-6P	393200-52-7P
	393200-53-8P	393200-54-9P	393200-55-0P	393200-56-1P	393200-57-2P
	393200-58-3P	393200-59-4P	393200-60-7P	393200-61-8P	393200-62-9P
	393200-63-0P	393200-64-1P	393200-65-2P	393200-66-3P	393200-67-4P
	393200-68-5P	393200-69-6P	393200-70-9P	393200-71-0P	393200-72-1P
	393200-73-2P	393200-74-3P	393200-75-4P	393200-76-5P	393200-77-6P
	393200-78-7P	393200-79-8P	393200-80-1P	393200-81-2P	393200-82-3P
	393200-83-4P	393200-84-5P	393200-85-6P	393200-86-7P	393200-87-8P
	393200-88-9P	393200-89-0P	393200-90-3P	393200-91-4P	393200-92-5P
	393200-93-6P	393200-94-7P	393200-95-8P	393200-96-9P	393200-97-0P
	393200-98-1P	393200-99-2P	393201-00-8P	393201-01-9P	393201-02-0P
	393201-03-1P	393201-04-2P	393201-05-3P	393201-06-4P	393201-07-5P
	393201-08-6P	393201-09-7P	393201-10-0P	393201-11-1P	393201-12-2P
	393201-13-3P	393201-14-4P	393201-15-5P	393201-16-6P	393201-17-7P
	393201-18-8P	393201-19-9P	393201-20-2P	393201-21-3P	393201-22-4P
	393201-23-5P	393201-24-6P	393201-25-7P	393201-26-8P	393201-27-9P
	393201-28-0P	393201-29-1P	393201-30-4P	393201-31-5P	393201-32-6P
	393201-33-7P	393201-34-8P	393201-35-9P	393201-36-0P	393201-37-1P
	393201-38-2P	393201-39-3P			

RL: BPN (Biosynthetic preparation); NUU (Other use, unclassified); PRP (Properties); BIOL (Biological study); PREP (Preparation); USES (Uses)
(amino acid sequence; recombinant **Bacillus pectate lyases** with improved thermostability and their use in **detergents**)

IT 393200-43-6D, derivs.

RL: BUU (Biological use, unclassified); PRP (Properties); BIOL (Biological study); USES (Uses)

(nucleotide sequence; recombinant **Bacillus pectate lyases** with improved thermostability and their use in **detergents**)

IT 9000-90-2, **.alpha.-Amylase** 9001-62-1, **Lipase** 9001-92-7, **Protease**
9002-10-2, **Phenol oxidase** 9003-99-0, **Peroxidase** 9012-54-8,
Cellulase 9025-56-3, **Hemicellulase** 9025-98-3, **Pectin**
methylesterase 9032-08-0, **Glucoamylase** 9032-75-1, **Pectinase**
9033-35-6, Pectin lyase 9035-73-8, **Oxidase**
9037-80-3, **Reductase** 9067-74-7, **Arabinosidase** 9074-98-0,
.beta.-Glucanase 9075-68-7, **Pullulanase** 37278-89-0, **Xylanase**
37329-65-0, **Cellobiohydrolase** 39346-28-6, **Galactanase** 42613-30-9,
Ligninase 51377-41-4, **Cutinase** 60748-69-8, **Mannanase** 76901-10-5,
Xyloglucanase 80146-85-6, **Transglutaminase** 80498-15-3, **Laccase**
131384-64-0, **Rhamnogalacturonase** 132965-81-2, **Pectin acetyl**
esterase

RL: NUU (Other use, unclassified); USES (Uses)
(**pectate lyase** variants and; recombinant **Bacillus**

pectate lyases with improved thermostability and
their use in detergents)

IT 9015-75-2DP, E.C. 4.2.2.2, derivs.
RL: BPN (Biosynthetic preparation); NUU (Other use, unclassified); PRP (Properties); BIOL (Biological study); PREP (Preparation); USES (Uses)
(recombinant *Bacillus pectate lyases* with improved
thermostability and their use in detergents)

IT 393201-59-7 393201-60-0 393201-61-1 393201-62-2 393201-63-3
393201-64-4 393201-65-5 393201-66-6 393201-67-7 393201-68-8
393201-69-9 393201-70-2 393201-71-3
RL: PRP (Properties)
(unclaimed nucleotide sequence; recombinant *Bacillus pectate*
lyases with improved thermostability and their use in
detergents)

IT 393201-72-4
RL: PRP (Properties)
(unclaimed protein sequence; recombinant *Bacillus pectate*
lyases with improved thermostability and their use in
detergents)

IT 393201-73-5 393201-74-6 393201-75-7 393201-76-8 393201-77-9
393201-78-0 393201-79-1 393201-80-4
RL: PRP (Properties)
(unclaimed sequence; recombinant *Bacillus pectate*
lyases with improved thermostability and their use in
detergents)

L38 ANSWER 2 OF 31 HCAPLUS COPYRIGHT 2002 ACS DUPLICATE 1
AN 2001:661565 HCAPLUS
DN 135:223448
TI Cloning, characterization and use in liquid detergent
compositions of family 5 xyloglucanases from *Paenibacillus*
IN Wilting, Reinhard; Bjornvad, Mads Eskelund; Kauppinen, Markus Sakari;
Schuelein, Martin
PA Novozymes A/S, Den.
SO PCT Int. Appl., 99 pp.
CODEN: PIXXD2
DT Patent
LA English
IC ICM C12N009-42
ICS C11D003-386
CC 7-2 (Enzymes)
Section cross-reference(s): 3, 10, 40, 43, 46
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI WO 2001064853	A1	20010907	WO 2001-DK132	20010228
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG				
PRAI DK 2000-326	A	20000301		
AB Xyloglucanases belonging to family 5 of glycosyl hydrolases are derived from strains of <i>Paenibacillus</i> , esp. from strains of <i>Paenibacillus pabuli</i> . Cloning, sequence, expression and characterization of xyloglucanases from <i>Paenibacillus pabuli</i> and <i>Paenibacillus</i> strain DSM 13330 are reported.				

Cloning and sequencing of xyloglucanase-encoding genes from *Paenibacillus pabuli* and *Paenibacillus* strain DSM 13330 and expression and characterization of the encoded xyloglucanases is described. The xyloglucanases show high performance in conventional liq. detergent compns.

ST *Paenibacillus* xyloglucanase gene sequence liq detergent
IT Fibers
RL: PEP (Physical, engineering or chemical process); PRP (Properties);
PROC (Process)
(cellulosic, improving and processing of; cloning, characterization and use in liq. detergent compns. of family 5 xyloglucanases from *Paenibacillus*)
IT DNA sequences
Lactobacillus
Molecular cloning
Paenibacillus
Paenibacillus pabuli
Protein sequences
Scouring agents
(cloning, characterization and use in liq. detergent compns. of family 5 xyloglucanases from *Paenibacillus*)
IT Probes (nucleic acid)
RL: ARG (Analytical reagent use); BUU (Biological use, unclassified); ANST (Analytical study); BIOL (Biological study); USES (Uses)
(cloning, characterization and use in liq. detergent compns. of family 5 xyloglucanases from *Paenibacillus*)
IT Detergents
(enzyme-contg.; cloning, characterization and use in liq. detergent compns. of family 5 xyloglucanases from *Paenibacillus*)
IT *Cannabis sativa*
(fiber, processing of; cloning, characterization and use in liq. detergent compns. of family 5 xyloglucanases from *Paenibacillus*)
IT Gene, microbial
RL: BUU (Biological use, unclassified); PRP (Properties); BIOL (Biological study); USES (Uses)
(for xyloglucanase; cloning, characterization and use in liq. detergent compns. of family 5 xyloglucanases from *Paenibacillus*)
IT Nonwoven fabrics
Textiles
Yarns
(improving and processing of; cloning, characterization and use in liq. detergent compns. of family 5 xyloglucanases from *Paenibacillus*)
IT Detergents
(laundry, enzyme-contg.; cloning, characterization and use in liq. detergent compns. of family 5 xyloglucanases from *Paenibacillus*)
IT Yarns
(linen, processing of; cloning, characterization and use in liq. detergent compns. of family 5 xyloglucanases from *Paenibacillus*)
IT Flax
Jute fibers
(processing of; cloning, characterization and use in liq. detergent compns. of family 5 xyloglucanases from *Paenibacillus*)
IT *Bacillus* (bacterium genus)

Gram-positive bacteria (Firmicutes)
 (xyloglucanase from; cloning, characterization and use in liq.
 detergent compns. of family 5 xyloglucanases from
 Paenibacillus)

IT 358687-47-5P, Xyloglucanase (Paenibacillus pabuli)
 RL: BAC (Biological activity or effector, except adverse); BPN
 (Biosynthetic preparation); CAT (Catalyst use); MOA (Modifier or additive
 use); PRP (Properties); BIOL (Biological study); PREP (Preparation); USES
 (Uses)
 (amino acid sequence; cloning, characterization and use in liq.
 detergent compns. of family 5 xyloglucanases from
 Paenibacillus)

IT 358687-46-4DP, subfragments are claimed 358687-48-6DP, subfragments are
 claimed
 RL: BPN (Biosynthetic preparation); PRP (Properties); BIOL (Biological
 study); PREP (Preparation)
 (amino acid sequence; cloning, characterization and use in liq.
 detergent compns. of family 5 xyloglucanases from
 Paenibacillus)

IT 76901-10-5P, Xyloglucanase
 RL: BAC (Biological activity or effector, except adverse); BPN
 (Biosynthetic preparation); CAT (Catalyst use); MOA (Modifier or additive
 use); PRP (Properties); BIOL (Biological study); PREP (Preparation); USES
 (Uses)
 (cloning, characterization and use in liq. detergent compns.
 of family 5 xyloglucanases from Paenibacillus)

IT 9000-90-2, .alpha.-Amylase 9001-62-1, Lipase 9001-92-7, Protease
 9002-10-2, Phenoloxidase 9003-99-0, Peroxidase 9012-54-8,
 Cellulase 9015-75-2, Pectate lyase
 9025-98-3, Pectin methylesterase 9032-08-0, Glucoamylase 9032-75-1,
 Pectinase 9033-35-6, Pectin lyase
 9034-32-6, Hemicellulose 9035-73-8, Oxidase 9037-80-3, Reductase
 9074-98-0, .beta.-Glucanase 9075-68-7, Pullulanase 37278-89-0,
 Xylanase 37329-65-0, Cellobiohydrolase 42613-30-9, Ligninase
 51377-41-4, Cutinase 60748-69-8, Mannanase 80146-85-6,
 Transglutaminase 80498-15-3, Laccase 131384-64-0, Rhamnogalacturonase
 132965-81-2, Pectin acetyl esterase
 RL: CAT (Catalyst use); MOA (Modifier or additive use); USES (Uses)
 (compn. contg. xyloglucanase and; cloning, characterization and use in
 liq. detergent compns. of family 5 xyloglucanases from
 Paenibacillus)

IT 358687-42-0D, subfragments are claimed 358687-43-1 358687-44-2D,
 subfragments are claimed 358687-45-3D, subfragments are claimed
 RL: BUU (Biological use, unclassified); PRP (Properties); BIOL (Biological
 study); USES (Uses)
 (nucleotide sequence; cloning, characterization and use in liq.
 detergent compns. of family 5 xyloglucanases from
 Paenibacillus)

IT 261154-33-0, 15: PN: WO0164853 PAGE: 59 unclaimed DNA 261154-34-1, 16:
 PN: WO0164853 PAGE: 59 unclaimed DNA 261154-35-2, 17: PN: WO0164853
 PAGE: 59 unclaimed DNA 261154-36-3, 18: PN: WO0164853 PAGE: 59 unclaimed
 DNA 261154-37-4, 19: PN: WO0164853 PAGE: 59 unclaimed DNA 261154-38-5,
 20: PN: WO0164853 PAGE: 59 unclaimed DNA 358703-06-7 358703-08-9, 21:
 PN: WO0164853 PAGE: 67 unclaimed DNA 358703-09-0, 22: PN: WO0164853
 PAGE: 67 unclaimed DNA 358703-10-3, 23: PN: WO0164853 PAGE: 71 unclaimed
 DNA 358703-11-4, 24: PN: WO0164853 PAGE: 71 unclaimed DNA
 RL: PRP (Properties)
 (unclaimed nucleotide sequence; cloning, characterization and use in
 liq. detergent compns. of family 5 xyloglucanases from
 Paenibacillus)

IT 358703-01-2 358703-02-3 358703-03-4 358703-04-5 358703-05-6
 358703-07-8
 RL: PRP (Properties)
 (unclaimed protein sequence; cloning, characterization and use in liq.
 detergent compns. of family 5 xyloglucanases from
 Paenibacillus)

RE.CNT 3 THERE ARE 3 CITED REFERENCES AVAILABLE FOR THIS RECORD

RE

(1) Blanco, A; Appl Microbiol Biotechnol 1998, V50, P48 HCPLUS
 (2) Coutinho, P; <http://afmb.cnrs-mrs.fr/~pedro/CAZY/db.html> 1999
 (3) Novo Nordisk AS; WO 9902663 A1 1999 HCPLUS

L38 ANSWER 3 OF 31 HCPLUS COPYRIGHT 2002 ACS DUPLICATE 2

AN 2001:636195 HCPLUS

DN 135:192166

TI Cloning, recombinant expression and use in detergent
 compositions of family 44 xyloglucanases from Paenibacillus

IN Schnorr, Kirk; Jorgensen, Per Lina; Schuelein, Martin

PA Novozymes A/S, Den.

SO PCT Int. Appl., 96 pp.

CODEN: PIXXD2

DT Patent

LA English

IC ICM C12N009-42

ICS C11D003-386

CC 7-2 (Enzymes)

Section cross-reference(s): 3, 10, 40, 43, 46

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 2001062903	A1	20010830	WO 2001-DK116	20010221
	W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG				

PRAI DK 2000-291 A 20000224

AB Xyloglucanases belonging to family 44 of glycosyl hydrolases and having a relative xyloglucanase activity of at least 30 between pH 5 and pH 8 are derived from the genus Paenibacillus, esp. from a strain of Paenibacillus polymyxa or Paenibacillus sp. Cloning of xyloglucanase-encoding genes from Paenibacillus polymyxa and subcloning and expression in *Bacillus subtilis* of a core part of the xyloglucanase from *P. polymyxa* is described. The xyloglucanases exhibit high performance in conventional detergent compns.

ST Paenibacillus xyloglucanase gene sequence detergent

IT Fibers

RL: PEP (Physical, engineering or chemical process); PRP (Properties);

PROC (Process)

(cellulosic, improving properties and processing of; cloning,
 recombinant expression and use in detergent compns. of family
 44 xyloglucanases from Paenibacillus)

IT Escherichia coli

(cloning host; cloning, recombinant expression and use in
 detergent compns. of family 44 xyloglucanases from
 Paenibacillus)

IT DNA sequences
Molecular cloning
Paenibacillus
Paenibacillus pabuli
Paenibacillus polymyxa
Protein sequences
Scouring agents
(cloning, recombinant expression and use in **detergent** compns.
of family 44 xyloglucanases from Paenibacillus)

IT Probes (nucleic acid)
RL: ARG (Analytical reagent use); BUU (Biological use, unclassified); ANST (Analytical study); BIOL (Biological study); USES (Uses)
(cloning, recombinant expression and use in **detergent** compns.
of family 44 xyloglucanases from Paenibacillus)

IT Detergents
(enzyme-contg.; cloning, recombinant expression and use in
detergent compns. of family 44 xyloglucanases from
Paenibacillus)

IT Cannabis sativa
(fiber, processing of; cloning, recombinant expression and use in
detergent compns. of family 44 xyloglucanases from
Paenibacillus)

IT Nonwoven fabrics
Textiles
Yarns
(improving properties of; cloning, recombinant expression and use in
detergent compns. of family 44 xyloglucanases from
Paenibacillus)

IT Detergents
(laundry, enzyme-contg.; cloning, recombinant expression and use in
detergent compns. of family 44 xyloglucanases from
Paenibacillus)

IT Yarns
(linen, processing of; cloning, recombinant expression and use in
detergent compns. of family 44 xyloglucanases from
Paenibacillus)

IT Flax
Jute fibers
(processing of; cloning, recombinant expression and use in
detergent compns. of family 44 xyloglucanases from
Paenibacillus)

IT Bacillus (bacterium genus)
Bacteria (Eubacteria)
Fungi
Gram-positive bacteria (Firmicutes)
Lactobacillus
Microorganism
Yeast
(xyloglucanase from; cloning, recombinant expression and use in
detergent compns. of family 44 xyloglucanases from
Paenibacillus)

IT 357247-95-1P
RL: BPN (Biosynthetic preparation); CAT (Catalyst use); MOA (Modifier or
additive use); PRP (Properties); BIOL (Biological study); PREP (Preparation); USES (Uses)
(amino acid sequence; cloning, recombinant expression and use in
detergent compns. of family 44 xyloglucanases from
Paenibacillus)

IT 357247-94-0DP, subfragments are claimed 357247-96-2DP, subfragments are
claimed 357247-97-3DP, subfragments are claimed

RL: BPN (Biosynthetic preparation); PRP (Properties); BIOL (Biological study); PREP (Preparation)
 (amino acid sequence; cloning, recombinant expression and use in detergent compns. of family 44 xyloglucanases from Paenibacillus)

IT 76901-10-5P, Xyloglucanase
 RL: BPN (Biosynthetic preparation); CAT (Catalyst use); MOA (Modifier or additive use); PRP (Properties); BIOL (Biological study); PREP (Preparation); USES (Uses)
 (cloning, recombinant expression and use in detergent compns. of family 44 xyloglucanases from Paenibacillus)

IT 9000-90-2, .alpha.-Amylase 9001-62-1, Lipase 9001-92-7, Protease
 9002-10-2, Phenoloxidase 9003-99-0, Peroxidase 9012-54-8,
 Cellulase 9015-75-2, Pectate lyase
 9025-56-3, Hemicellulase 9025-98-3, Pectin methylesterase 9032-08-0,
 Glucoamylase 9032-75-1, Pectinase 9033-35-6, Pectin
 lyase 9035-73-8, Oxidase 9037-80-3, Reductase 9074-98-0,
 .beta.-Glucanase 9075-68-7, Pullulanase 37278-89-0, Xylanase
 37329-65-0, Celllobiohydrolase 42613-30-9, Ligninase 51377-41-4,
 Cutinase 60748-69-8, Mannanase 80146-85-6, Transglutaminase
 80498-15-3, Laccase 131384-64-0, Rhamnogalacturonase 132965-81-2,
 Pectin acetyl esterase
 RL: CAT (Catalyst use); MOA (Modifier or additive use); USES (Uses)
 (compr. contg. xyloglucanase and; cloning, recombinant expression and use in detergent compns. of family 44 xyloglucanases from Paenibacillus)

IT 357247-91-7D, subfragments are claimed 357247-92-8D, subfragments are claimed 357247-93-9D, subfragments are claimed 357247-98-4
 RL: BUU (Biological use, unclassified); PRP (Properties); BIOL (Biological study); USES (Uses)
 (nucleotide sequence; cloning, recombinant expression and use in detergent compns. of family 44 xyloglucanases from Paenibacillus)

IT 261154-33-0, 7: PN: WO0162903 SEQID: 36 unclaimed DNA 261154-34-1, 8:
 PN: WO0162903 SEQID: 37 unclaimed DNA 261154-35-2, 9: PN: WO0162903
 SEQID: 38 unclaimed DNA 261154-36-3 261154-37-4 261154-38-5
 355485-14-2 355485-15-3 357257-08-0 357257-09-1
 RL: PRP (Properties)
 (unclaimed nucleotide sequence; cloning, recombinant expression and use in detergent compns. of family 44 xyloglucanases from Paenibacillus)

RE.CNT 6 THERE ARE 6 CITED REFERENCES AVAILABLE FOR THIS RECORD

RE

- (1) Clariant Finance Limited; EP 0921188 A2 1999 HCPLUS
- (2) Coutinho, P; <http://afmb.cnrs-mrs.fr/~pedro/CAZY/db.html> 1999
- (3) Hansen, C; J Bacteriol 1992, V174(11), P3522 HCPLUS
- (4) Novo Nordisk AS; WO 9110732 A1 1991 HCPLUS
- (5) Novo Nordisk AS; WO 9117244 A1 1991 HCPLUS
- (6) Novo Nordisk AS; WO 9838288 A1 1998 HCPLUS

L38 ANSWER 4 OF 31 HCPLUS COPYRIGHT 2002 ACS DUPLICATE 3
 AN 2001:137358 HCPLUS

DN 134:204347

TI Characterization and production of purified alkaline xyloglucanase from Malbranchea and applications to laundry detergents and treatment of textiles

IN Wu, Wenping; Schulein, Martin; Kauppinen, Markus Sakari; Stringer, Mary Ann

PA Novo Nordisk A/S, Den.

SO PCT Int. Appl., 89 pp.

CODEN: PIXXD2

DT Patent

LA English

IC ICM C12N009-42

ICS C12N009-42; C12R001-645; C11D003-386; D06M016-00

CC 7-5 (Enzymes)

Section cross-reference(s): 3, 10, 16, 40, 43, 46

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 2001012794	A1	20010222	WO 2000-DK450	20000811
	W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
	RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG				

PRAI DK 1999-1121 A 19990813

US 1999-149397 P 19990817

AB An isolated or purified polypeptide having xyloglucanase activity which is obtained from a strain of the genus *Malbranchea* and has xyloglucanase activity in the pH range 4-11, measured at 50.degree.; and/or a mol. mass of 25.+-10 kDa, as detd. by SDS-PAGE; and/or an isoelec. point (pI) in the range 3-5; and/or an N-terminal sequence Ala-Asp-Phe-Cys-Gly-Gln-Xaa-Asp-Ser-Glu-Gln-Ser-Gly-Pro-Tyr-Ile-Val-Tyr-Asn-Asn- eu is useful in industrial applications such as in laundry **detergent** compns. and for treatment of textiles. Cloning, cDNA and encoded amino acid sequences of full-length xyloglucanase from *Malbranchea cinnamomea* are disclosed. Purifn. and characterization of the *M. cinnamomea* are also disclosed.

ST *Malbranchea xyloglucanase* cDNA sequence laundry **detergent**

textile

IT Fibers

RL: PEP (Physical, engineering or chemical process); PROC (Process) (cellulosic; characterization and prodn. of purified alk. xyloglucanase from *Malbranchea* and applications to laundry **detergents** and treatment of textiles)

IT Fermentation

*Malbranchea**Malbranchea albolutea**Malbranchea arcuata**Malbranchea aurantiaca**Malbranchea bolognesii-chiurcoi**Malbranchea chrysosporioidea**Malbranchea cinnamomea**Malbranchea circinata**Malbranchea dendritica**Malbranchea filamentosa**Malbranchea flava**Malbranchea flavorosea**Malbranchea flocciformis**Malbranchea fulva**Malbranchea graminicola**Malbranchea gypsea**Malbranchea kambayashii**Malbranchea multicolor**Malbranchea pulchella**Malbranchea sclerotica*

Malbranchea setosa
Molecular cloning
Nonwoven fabrics
Protein sequences
Scouring agents
Thermal stability
Yarns
cDNA sequences
(characterization and prodn. of purified alk. xyloglucanase from Malbranchea and applications to laundry **detergents** and treatment of textiles)

IT Detergents
(enzyme-contg.; characterization and prodn. of purified alk. xyloglucanase from Malbranchea and applications to laundry **detergents** and treatment of textiles)

IT Cannabis sativa
(fiber, rattling of; characterization and prodn. of purified alk. xyloglucanase from Malbranchea and applications to laundry **detergents** and treatment of textiles)

IT Detergents
(laundry, enzyme-contg.; characterization and prodn. of purified alk. xyloglucanase from Malbranchea and applications to laundry **detergents** and treatment of textiles)

IT Textiles
Yarns
(linen, rattling of; characterization and prodn. of purified alk. xyloglucanase from Malbranchea and applications to laundry **detergents** and treatment of textiles)

IT Flax
Jute fibers
(rattling of; characterization and prodn. of purified alk. xyloglucanase from Malbranchea and applications to laundry **detergents** and treatment of textiles)

IT Textiles
(woven; characterization and prodn. of purified alk. xyloglucanase from Malbranchea and applications to laundry **detergents** and treatment of textiles)

IT 328049-36-1DP, subfragments are claimed
RL: BPN (Biosynthetic preparation); BSU (Biological study, unclassified); PRP (Properties); BIOL (Biological study); PREP (Preparation)
(amino acid sequence; characterization and prodn. of purified alk. xyloglucanase from Malbranchea and applications to laundry **detergents** and treatment of textiles)

IT 328049-38-3DP, subfragments are claimed
RL: BPN (Biosynthetic preparation); MOA (Modifier or additive use); PRP (Properties); PUR (Purification or recovery); BIOL (Biological study); PREP (Preparation); USES (Uses)
(amino acid sequence; characterization and prodn. of purified alk. xyloglucanase from Malbranchea and applications to laundry **detergents** and treatment of textiles)

IT 76901-10-5P, Xyloglucanase
RL: BPN (Biosynthetic preparation); MOA (Modifier or additive use); PRP (Properties); PUR (Purification or recovery); BIOL (Biological study); PREP (Preparation); USES (Uses)
(characterization and prodn. of purified alk. xyloglucanase from Malbranchea and applications to laundry **detergents** and treatment of textiles)

IT 326856-38-6
RL: BSU (Biological study, unclassified); PRP (Properties); BIOL (Biological study)

(characterization and prodn. of purified alk. xyloglucanase from Malbranchea and applications to laundry **detergents** and treatment of textiles)

IT 9032-92-2, Glycosidase
 RL: BSU (Biological study, unclassified); BIOL (Biological study) (family 12; characterization and prodn. of purified alk. xyloglucanase from Malbranchea and applications to laundry **detergents** and treatment of textiles)

IT 328049-35-0D, subfragments are claimed 328049-37-2D, subfragments are claimed
 RL: BUU (Biological use, unclassified); PRP (Properties); BIOL (Biological study); USES (Uses)
 (nucleotide sequence; characterization and prodn. of purified alk. xyloglucanase from Malbranchea and applications to laundry **detergents** and treatment of textiles)

IT 9000-90-2, .alpha.-Amylase 9001-62-1, Lipase 9001-92-7, Protease
 9002-10-2, Phenoloxidase 9003-99-0, **Peroxidase** 9012-54-8,
 Cellulase 9015-75-2, **Pectate lyase**
 9025-56-3, Hemicellulase 9025-98-3, Pectinmethylesterase 9032-08-0,
 Glucoamylase 9032-75-1, Pectinase 9033-35-6, **Pectin**
lyase 9035-73-8, Oxidase 9037-80-3, Reductase 9074-98-0,
 .beta.-Glucanase 9075-68-7, Pullulanase 37278-89-0, Xylanase
 37329-65-0, Celllobiohydrolase 42613-30-9, Ligninase 51377-41-4,
 Cutinase 60748-69-8, Mannanase 80146-85-6, Transglutaminase
 80498-15-3, Laccase 131384-64-0, Rhamnogalacturonase 132965-81-2,
 Pectin acetyl esterase
 RL: TEM (Technical or engineered material use); USES (Uses)
 (prepn. contg. xyloglucanase and; characterization and prodn. of purified alk. xyloglucanase from Malbranchea and applications to laundry **detergents** and treatment of textiles)

IT 308309-96-8 308309-97-9 308309-98-0 308309-99-1 308310-01-2
 328051-38-3 328051-39-4 328051-40-7 328051-41-8 328051-42-9
 RL: PRP (Properties)
 (unclaimed nucleotide sequence; characterization and prodn. of purified alk. xyloglucanase from Malbranchea and applications to laundry **detergents** and treatment of textiles)

IT 328068-67-3
 RL: PRP (Properties)
 (unclaimed protein sequence; characterization and prodn. of purified alk. xyloglucanase from Malbranchea and applications to laundry **detergents** and treatment of textiles)

IT 9004-32-4, Carboxymethylcellulose 9004-34-6, Avicel, biological studies
 327981-25-9, AZCL-HE-Cellulose
 RL: BSU (Biological study, unclassified); BIOL (Biological study) (xyloglucanase exhibiting no activity on; characterization and prodn. of purified alk. xyloglucanase from Malbranchea and applications to laundry **detergents** and treatment of textiles)

RE.CNT 8 THERE ARE 8 CITED REFERENCES AVAILABLE FOR THIS RECORD

RE

- (1) Ajinomoto KK; JP 50-68549 A 1993
- (2) Kauppinen, S; GenBank Accession No AF043595 1999
- (3) Novo Nordisk AS; WO 9414953 A1 1994 HCPLUS
- (4) Novo Nordisk AS; WO 9902663 A1 1999 HCPLUS
- (5) Rejon-Palomares, A; Symbiosis 1996, V21, P249 HCPLUS
- (6) The Procter & Gamble Company; WO 9850513 A1 1998 HCPLUS
- (7) Unilever Plc; WO 9317101 A1 1993 HCPLUS
- (8) Virk, S; Indian Journal of Microbiology 1996, V36, P53

DNC C2001-097535

TI Screening for microbial-produced products by sequential use of different high throughput assays combines their advantages and is useful to select clones producing industrial enzymes or pharmaceuticals.

DC B04 D16

IN HANSEN, P K; KONGSBAK, L; MOELLER, S; PEDERSEN, H
PA (NOVO) NOVOZYMES AS

CYC 93

PI WO 2001032858 A1 20010510 (200133)* EN 55p C12N015-10

RW: AT BE CH CY DE DK EA ES FI FR GB GH GM GR IE IT KE LS LU MC MW MZ
NL OA PT SD SE SL SZ TZ UG ZW
W: AE AG AL AM AT AU AZ BA BB BG BR BY BZ CA CH CN CR CU CZ DE DK DM
DZ EE ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR KZ LC
LK LR LS LT LU LV MA MD MG MK MN MW MX MZ NO NZ PL PT RO RU SD SE
SG SI SK SL TJ TM TR TT TZ UA UG UZ VN YU ZA ZW

AU 2000076461 A 20010514 (200149) C12N015-10

ADT WO 2001032858 A1 WO 2000-DK567 20001010; AU 2000076461 A AU 2000-76461
20001010

FDT AU 2000076461 A Based on WO 200132858

PRAI DK 1999-1604 19991105

IC ICM C12N015-10

ICS C12Q001-00; C12Q001-68

ICA C12N009-00

AB WO 200132858 A UPAB: 20010615

NOVELTY - A high throughput screening (HTS) method for a microbial-produced material, comprising sequentially performing at least two different HTS assays from FACS, array-based, colony picking, substrate replacement and substrate reloading assays, is new.

USE - The invention is used to screen microorganisms or gene libraries for production of secreted products, particularly for use as industrial enzymes or pharmaceutical products.

ADVANTAGE - Sequentially using two or more different high throughput assays is more efficient and accurate than using a single assay, as it combines the advantages of different assays. For example a pre-screen substrate reloading assay will first semi-quantitatively select clones of interest, whilst an array-based assay will rank the isolated clones in a more quantitative manner according to activity.

Dwg.0/0

FS CPI

FA AB; DCN

MC CPI: B04-C01; B04-E01; B04-F09; B04-F10; B04-L01; B11-C09; B12-K04E;
D05-H09; D05-H12

L38 ANSWER 6 OF 31 WPIX COPYRIGHT 2002 DERWENT INFORMATION LTD

AN 2001-328786 [34] WPIX

DNC C2001-100876

TI High throughput screening of host cell population for producing desired molecule, by culturing host cells in spatial array, assaying array positions for producing molecule and selecting cells from assayed positions.

DC B04 C06 D16

IN BECK, T C; ERNST, S; FRISNER, H; HANSEN, P K; HUSUM, T L; JOERGENSEN, B R;
KONGSBAK, L; LAMSA, M; PEDERSEN, H; VIND, J; VON OSSOWSKI, I

PA (NOVO) NOVOZYMES AS

CYC 93

PI WO 2001032844 A1 20010510 (200134)* EN 74p C12N009-00

RW: AT BE CH CY DE DK EA ES FI FR GB GH GM GR IE IT KE LS LU MC MW MZ
NL OA PT SD SE SL SZ TZ UG ZW
W: AE AG AL AM AT AU AZ BA BB BG BR BY BZ CA CH CN CR CU CZ DE DK DM
DZ EE ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR KZ LC

LK LR LS LT LU LV MA MD MG MK MN MW MX MZ NO NZ PL PT RO RU SD SE
 SG SI SK SL TJ TM TR TT TZ UA UG UZ VN YU ZA ZW
 AU 2000076462 A 20010514 (200149) C12N009-00
 ADT WO 2001032844 A1 WO 2000-DK568 20001010; AU 2000076462 A AU 2000-76462
 20001010
 FDT AU 2000076462 A Based on WO 200132844
 PRAI DK 1999-1605 19991105
 IC ICM C12N009-00
 ICS C12M001-18
 AB WO 200132844 A UPAB: 20010620
 NOVELTY - High throughput screening (M1) of a large population of host cells for production of a molecule, involves arranging the host cells in spatial array so each position in the spatial array is occupied by one cell, cultivating the host cells, assaying each array positions for production of the molecule of interest, and selecting the cells from those positions where the molecule was produced.

DETAILED DESCRIPTION - INDEPENDENT CLAIMS are also included for the following:

- (1) screening (M2) a DNA library for DNA of interest, involves creating host cells comprising the DNA library, and using (M1) to assays for a host cell producing a molecule of interest, where the host cell comprises DNA of interest;
- (2) a recombinant vector (I) comprising DNA isolated by (M2);
- (3) a recombinant host cell (II) comprising DNA isolated by (M2) or (I);
- (4) a transgenic animal (III) containing and expressing the DNA of interest isolated by (M2); and
- (5) a transgenic plant (IV) containing and expressing the DNA of interest isolated by (M2).

USE - M1 is useful for determination of a chemical or physical event in a live cell, preferably lysis, growth inhibition, growth promotion, or production of a protein of a protein or another molecule by the cell, for determination of an event in which the molecule of interest interacts with another molecule, preferably leading to a binding event or a chemical modification of the other molecule, or for determination of the cleavage, isomerization, ligation or other modification of a substrate, where the substrate is a polymer preferably of polypeptides, cellulose, polysaccharides or starches and is immobilized to the surface of a solid material, preferably textile or ceramics. The substrate is a solid surface, preferably a cellulose swatch, and is labeled with a detectable probe which is fluorescent, preferably fluorescein-5-isothiocyanate (FITC) or dichlorotriazino-5-aminofluorescein (DTAF). (II) is useful for producing a molecule of interest, by cultivating (II) in suitable culture medium under conditions permitting expression of the DNA of interest and recovering the resulting molecule from the culture medium. (III) is useful for producing a material of interest by recovering the molecule from any part or secrete of/from (III). (IV) is useful for producing a molecule of interest by growing a cell of (IV) and recovering the molecule from the resulting plant (all claimed).

ADVANTAGE - (M1) efficiently and accurately screens large numbers of cell populations producing variants of a molecule of interest. In (M1), the conditions of growth is defined so as to achieve a uniform distribution of growth and gene expression in identical clones in the wells of the same microtiter plate and the HTS assay is independent of molecule concentration within a broad range.

Dwg.0/0

FS CPI
 FA AB; DCN
 MC CPI: B04-E03; B04-E08; B04-F0100E; B04-F0700E; B11-C07B3; B11-C08;
 B11-C08E2; B12-K04E; B14-A04A; C04-E03; C04-E08; C04-F0100E;

C04-F0700E; C04-F0800E; C11-C07B3; C11-C08; C11-C08E2; C12-K04E;
C14-A04A; D05-H09; D05-H12E; D05-H14; D05-H16A; D05-H16B

L38 ANSWER 7 OF 31 HCPLUS COPYRIGHT 2002 ACS DUPLICATE 4
 AN 2000:666862 HCPLUS
 DN 133:248956
 TI Cloning, expression, purifn. and characterization of a **pectate lyase** from *Bacillus* and its use in laundering and textile processing
 IN Bjornvad, Mads Eskelund; Andersen, Jens Tonne; Schnorr, Kirk; Schulein, Martin; Kongsbak, Lars
 PA Novo Nordisk A/s, Den.
 SO PCT Int. Appl., 64 pp.
 CODEN: PIXXD2
 DT Patent
 LA English
 IC ICM C12N009-88
 ICS C12N009-88; C12R001-01; C11D003-386
 CC 7-5 (Enzymes)
 Section cross-reference(s): 3, 10, 17, 40, 43, 46
 FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 2000055309	A1	20000921	WO 2000-DK111	20000315
	W: AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
	RW: GH, GM, KE, LS, MW, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG				
PRAI	DK 1999-367	A	19990316		
AB	Cloning, expression, purifn. and characterization of a pectate lyase from <i>Bacillus</i> sp. belonging to a novel family of polysaccharide lyases is disclosed. Nucleotide sequence of the pectate lyase gene and amino acid sequence of the encoded enzyme are reported. This novel pectate lyase of <i>Bacillus</i> has good performance in industrial processes under neutral or alk. conditions such as laundering and textile processing.				
ST	Bacillus pectate lyase gene sequence laundering textile processing				
IT	Nucleic acid hybridization (DNA-DNA; cloning, expression, purifn., characterization and uses of pectate lyase from <i>Bacillus</i>)				
IT	Enzyme functional sites (cellulose-binding domain, fusion products with pectate lyase ; cloning, expression, purifn., characterization and uses of pectate lyase from <i>Bacillus</i>)				
IT	Fibers RL: PEP (Physical, engineering or chemical process); PROC (Process) (cellulosic; cloning, expression, purifn., characterization and uses of pectate lyase from <i>Bacillus</i>)				
IT	Textiles Yarns (cloning, expression, purifn. and characterization of pectate lyase from <i>Bacillus</i> and its use in laundering and textile processing)				
IT	Bacillus (bacterium genus)				

Cellulose pulp
Cleaning solvents
DNA sequences
Feed additives
Molecular cloning
Nucleic acid hybridization
Protein sequences
Scouring agents
(cloning, expression, purifn., characterization and uses of
pectate lyase from *Bacillus*)

IT Probes (nucleic acid)
RL: ARG (Analytical reagent use); ANST (Analytical study); USES (Uses)
(cloning, expression, purifn., characterization and uses of
pectate lyase from *Bacillus*)

IT Plant tissue
(degrdn. or modification of; cloning, expression, purifn.,
characterization and uses of **pectate lyase** from
Bacillus)

IT Detergents
(enzyme-contg.; cloning, expression, purifn. and characterization of
pectate lyase from *Bacillus* and its use in laundering
and textile processing)

IT Gene, microbial
RL: BSU (Biological study, unclassified); BUU (Biological use,
unclassified); PRP (Properties); BIOL (Biological study); USES (Uses)
(for **pectate lyase**; cloning, expression, purifn.,
characterization and uses of **pectate lyase** from
Bacillus)

IT Enzymes, preparation
RL: BPN (Biosynthetic preparation); CAT (Catalyst use); BIOL (Biological
study); PREP (Preparation); USES (Uses)
(fusion products, of **pectate lyase** with
cellulose-binding domain; cloning, expression, purifn.,
characterization and uses of **pectate lyase** from
Bacillus)

IT Detergents
(laundry, enzyme-contg.; cloning, expression, purifn. and
characterization of **pectate lyase** from *Bacillus* and
its use in laundering and textile processing)

IT Fruit and vegetable juices
Wine
(processing; cloning, expression, purifn., characterization and uses of
pectate lyase from *Bacillus*)

IT Digestion, chemical
(retting; cloning, expression, purifn., characterization and uses of
pectate lyase from *Bacillus*)

IT Recycling
(wastepaper; cloning, expression, purifn., characterization and uses of
pectate lyase from *Bacillus*)

IT 295371-03-8P 295371-04-9P, **Lyase, pectate** (*Bacillus*
clone MB939)
RL: BAC (Biological activity or effector, except adverse); BPN
(Biosynthetic preparation); CAT (Catalyst use); FFD (Food or feed use);
PRP (Properties); BIOL (Biological study); PREP (Preparation); USES (Uses)
(amino acid sequence; cloning, expression, purifn., characterization
and uses of **pectate lyase** from *Bacillus*)

IT 9015-75-2P, **Pectate lyase**
RL: BAC (Biological activity or effector, except adverse); BPN
(Biosynthetic preparation); CAT (Catalyst use); FFD (Food or feed use);
PRP (Properties); BIOL (Biological study); PREP (Preparation); USES (Uses)

(cloning, expression, purifn., characterization and uses of **pectate lyase** from **Bacillus**)

IT 9000-90-2, **.alpha.-Amylase** 9001-62-1, **Lipase** 9001-92-7, **Protease**
 9002-10-2, **Phenoloxidase** 9003-99-0, **Peroxidase** 9012-54-8,
Cellulase 9025-56-3, **Hemicellulase** 9025-98-3, **Pectin methylesterase**
 9032-08-0, **Glucoamylase** 9032-75-1, **Pectinase** 9033-35-6
 , **Pectin lyase** 9035-73-8, **Oxidase** 9037-80-3,
Reductase 9067-74-7, **Arabinosidase** 9074-98-0, **.beta.-Glucanase**
 9075-68-7, **Pullulanase** 37278-89-0, **Xylanase** 37329-65-0,
Celllobiohydrolase 39346-28-6, **Galactanase** 42613-30-9, **Ligninase**
 51377-41-4, **Cutinase** 60748-69-8, **Mannanase** 76901-10-5, **Xyloglucanase**
 80146-85-6, **Transglutaminase** 80498-15-3, **Laccase** 131384-64-0,
Rhamnogalacturonase 132965-81-2, **Pectin acetyl esterase**

RL: **CAT** (Catalyst use); **USES** (Uses)

(comprn. contg. **pectate lyase** and; cloning,
 expression, purifn., characterization and uses of **pectate**
lyase from **Bacillus**)

IT 295371-01-6 295371-02-7

RL: **BSU** (Biological study, unclassified); **BUU** (Biological use,
 unclassified); **PRP** (Properties); **BIOL** (Biological study); **USES** (Uses)
 (nucleotide sequence; cloning, expression, purifn., characterization
 and uses of **pectate lyase** from **Bacillus**)

RE.CNT 5 THERE ARE 5 CITED REFERENCES AVAILABLE FOR THIS RECORD

RE

- (1) Kao Corporation; EP 0870834 A1 1998 HCAPLUS
- (2) Novo Nordisk AS; WO 9727290 A1 1997 HCAPLUS
- (3) Novo Nordisk AS; WO 9727291 A1 1997 HCAPLUS
- (4) Novo Nordisk AS; WO 9927083 A1 1999 HCAPLUS
- (5) Novo Nordisk AS; WO 9927084 A1 1999 HCAPLUS

L38 ANSWER 8 OF 31 HCAPLUS COPYRIGHT 2002 ACS

DUPLICATE 5

AN 2000:493650 HCAPLUS

DN 133:106620

TI **Detergent compositions comprising a pectate**
lyase and a bleach booster

IN Showell, Michael Stanford; Zhu, Yong; Moese, Rosa Laura; Bettiol, Jean-Luc
 Philippe; Busch, Alfred

PA The Procter & Gamble Company, USA

SO PCT Int. Appl., 97 pp.

CODEN: PIXXD2

DT Patent

LA English

IC ICM C11D003-386

ICS C11D003-39; C11D003-28; C11D003-34

CC 46-5 (Surface Active Agents and **Detergents**)

FAN.CNT 7

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 2000042151	A1	20000720	WO 1999-US803	19990114
	W: AL, AM, AT, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, CZ, DE, DE, DK, DK, EE, EE, ES, FI, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
	RW: GH, GM, KE, LS, MW, SD, SZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG				
	AU 9924565	A1	20000801	AU 1999-24565	19990114
	WO 2000042156	A1	20000720	WO 2000-US838	20000113

W: AE, AL, AM, AT, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, CZ, DE, DE, DK, DK, DM, EE, EE, ES, FI, FI, GB, GD, GE, GH, GM; HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM
 RW: GH, GM, KE, LS, MW, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG
 EP 1141200 A1 20011010 EP 2000-904330 20000113
 R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO
 BR 2000007817 A 20011106 BR 2000-7817 20000113
 PRAI WO 1999-US790 W 19990114
 WO 1999-US800 W 19990114
 WO 1999-US801 W 19990114
 WO 1999-US802 W 19990114
 WO 1999-US803 A 19990114
 WO 2000-US838 W 20000113
 OS MARPAT 133:106620
 AB Detergent compns. comprise pectate lyase, peroxygen source, and 0.1-10% color-safe bleach booster for superior cleaning of fabrics and hard surfaces. An example granular detergent contained pectate lyase 0.1, sodium tripolyphosphate 22.0, sodium carbonate 45.0, sodium silicate 6.2, 1-(3,4-dihydroisoquinolinium)decanesulfate 0.4, Plurafac LF 404 0.5%, and the balance water.
 ST pectate lyase bleach booster
 detergent; imine bleach booster detergent;
 dihydroisoquinolinium decanesulfate bleach booster
 IT Detergents
 (detergent compns. comprising a pectate lyase and a bleach booster for cleaning of fabrics and hard surfaces in removal of plant, food, and body soils)
 IT Imines
 RL: MOA (Modifier or additive use); USES (Uses)
 (detergent compns. comprising a pectate lyase and a bleach booster for cleaning of fabrics and hard surfaces in removal of plant, food, and body soils)
 IT Detergents
 (dishwashing; detergent compns. comprising a pectate lyase and a bleach booster for cleaning of fabrics and hard surfaces in removal of plant, food, and body soils)
 IT Bleaching agents
 (imine booster; detergent compns. comprising a pectate lyase and a bleach booster for cleaning of fabrics and hard surfaces in removal of plant, food, and body soils)
 IT Detergents
 (laundry; detergent compns. comprising a pectate lyase and a bleach booster for cleaning of fabrics and hard surfaces in removal of plant, food, and body soils)
 IT 184770-71-6P, 3-(3,4-Dihydroisoquinolinium)propanesulfonate 205382-99-6P
 RL: IMF (Industrial manufacture); MOA (Modifier or additive use); PREP (Preparation); USES (Uses)
 (detergent compns. comprising a pectate lyase and a bleach booster for cleaning of fabrics and hard surfaces in removal of plant, food, and body soils)
 IT 3230-65-7P, 3,4-Dihydroisoquinoline 117470-91-4P
 RL: IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation)

(detergent compns. comprising a **pectate lyase** and a **bleach booster** for cleaning of fabrics and hard surfaces in removal of plant, food, and body soils)

IT 64-04-0, Phenethylamine 1119-86-4, 1,2-Decanediol 1120-71-4,
1,3-Propanesultone
RL: RCT (Reactant)
(detergent compns. comprising a **pectate lyase** and a **bleach booster** for cleaning of fabrics and hard surfaces in removal of plant, food, and body soils)

IT 9015-75-2, **Pectate lyase**
RL: MOA (Modifier or additive use); USES (Uses)
(from bacillus agaradhaerens; detergent compns. comprising a **pectate lyase** and a **bleach booster** for cleaning of fabrics and hard surfaces in removal of plant, food, and body soils)

RE.CNT 3 THERE ARE 3 CITED REFERENCES AVAILABLE FOR THIS RECORD

RE
(1) Procter & Gamble; WO 9710323 A 1997 HCPLUS
(2) Procter & Gamble; WO 9816614 A 1998 HCPLUS
(3) The Procter & Gamble Co; WO 9806808 A 1998 HCPLUS

L38 ANSWER 9 OF 31 HCPLUS COPYRIGHT 2002 ACS DUPLICATE 6
AN 2000:493648 HCPLUS
DN 133:106610
TI Detergent compositions comprising a **pectate lyase** and a **diacyl peroxide**
IN Showell, Michael Stanford; Zhu, Yong; Wells, Eric; Moese, Rosa Laura ~~A~~
PA The Procter & Gamble Company, USA
SO PCT Int. Appl., 84 pp.
CODEN: PIXXD2
DT Patent
LA English
IC ICM C11D003-386
ICS C11D003-39
CC 46-3 (Surface Active Agents and **Detergents**)
FAN.CNT 7

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2000042149	A1	20000720	WO 1999-US801	19990114
W: AL, AM, AT, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
RW: GH, GM, KE, LS, MW, SD, SZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG				
AU 9924563	A1	20000801	AU 1999-24563	19990114
WO 2000042156	A1	20000720	WO 2000-US838	20000113
W: AE, AL, AM, AT, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, CZ, DE, DE, DK, DK, DM, EE, EE, ES, FI, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
RW: GH, GM, KE, LS, MW, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG				
EP 1141200	A1	20011010	EP 2000-904330	20000113

R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT,
IE, SI, LT, LV, FI, RO

BR 2000007817	A	20011106	BR 2000-7817	20000113
PRAI WO 1999-US790	W	19990114		
WO 1999-US800	W	19990114		
WO 1999-US801	A	19990114		
WO 1999-US802	W	19990114		
WO 1999-US803	W	19990114		
WO 2000-US838	W	20000113		

AB The present invention relates to **detergent** compns. comprising a **pectate lyase** and a **diacyl peroxide** bleach system for superior cleaning performance.

ST **pectate lyase diacyl peroxide**
detergent

IT **Peroxides, uses**
RL: TEM (Technical or engineered material use); USES (Uses)
(acyl; **detergent** compns. comprising a **pectate** lyase and a **diacyl peroxide**)

IT **Detergents**
(**detergent** compns. comprising a **pectate** lyase and a **diacyl peroxide**)

IT 94-36-0, **Dibenzoyl peroxide**, uses 105-74-8, **Dilauroyl peroxide** 3034-79-5, **Di(2-methyl benzoyl) peroxide** 9015-75-2, **Pectate lyase** 10484-48-7, **Benzoyl succinyl peroxide** 34414-98-7, **Benzoyl glutaryl peroxide**
RL: TEM (Technical or engineered material use); USES (Uses)
(**detergent** compns. comprising a **pectate** lyase and a **diacyl peroxide**)

RE.CNT 7 THERE ARE 7 CITED REFERENCES AVAILABLE FOR THIS RECORD

RE

(1) Bostick, J; US 5334326 A 1994 HCAPLUS
(2) The Procter & Gamble Co; EP 0717102 A 1996 HCAPLUS
(3) The Procter & Gamble Co; WO 9617921 A 1996 HCAPLUS
(4) The Procter & Gamble Co; WO 9806808 A 1998 HCAPLUS
(5) The Procter & Gamble Co; WO 9839402 A 1998 HCAPLUS
(6) The Procter & Gamble Co; WO 9839403 A 1998 HCAPLUS
(7) Unilever Nv; EP 0257700 A 1988 HCAPLUS

L38 ANSWER 10 OF 31 HCAPLUS COPYRIGHT 2002 ACS
AN 2000:909125 HCAPLUS
DN 134:68039
TI Pectin degrading enzymes from *Bacillus licheniformis* and their industrial applications
IN Andersen, Lene Nonboe; Schulein, Martin; Lange, Niels Erik Krebs; Bjornvad, Mads Eskelund; Schnorr, Kirk
PA Novo Nordisk A/S, Den.
SO U.S., 33 pp., Cont.-in-part of U. S. Ser. No. 73,684.
CODEN: USXXAM
DT Patent
LA English
IC C12N009-24; C12N009-88; D06M016-00
NCL 43520000
CC 7-2 (Enzymes)
Section cross-reference(s): 3, 10, 17, 40, 46
FAN.CNT 3

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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PI US 6165769	A	20001226	US 1998-198956	19981124
PI US 6124127	A	20000926	US 1998-73684	19980506

US 6187580	B1	20010213	US 1998-198955	19981124
US 6280995	B1	20010828	US 2000-546500	20000411
US 6284524	B1	20010904	US 2000-546762	20000411

PRAI DK 1997-1344 A 19971124

US 1997-67240 P 19971202

US 1998-73684 A2 19980506

DK 1997-1343 A 19971124

US 1997-67249 P 19971202

AB Pectin degrading enzymes derived from or endogenous to *Bacillus licheniformis* or other *Bacillus* species which are at least 99% homologous to *Bacillus licheniformis* based on aligned 16S rDNA sequences have optimum activity at pH higher than 8. The pectin degrading enzymes belong to the enzyme classes **pectate lyases** (EC 4.2.2.2), **pectin lyases** (EC 4.2.2.10) and **polygalacturonases** (EC 3.2.1.15) and are useful in industrial processes under alk. conditions such as in textile processing, wine or juice processing, and as an active ingredient in laundry **detergents** and hard surface cleaning products. Gene and deduced amino acid sequences are provided for two **pectate lyases**, a **pectin lyase**, and a **polygalacturonase**.

ST *Bacillus* pectin degrading enzyme gene sequence; **lyase pectin pectate** gene sequence *Bacillus*; **polygalacturonase** gene sequence *Bacillus*; **detergent** textile wine juice processing pectin degrading enzyme

IT Fibers
RL: PEP (Physical, engineering or chemical process); PROC (Process) (cellulosic; pectin degrading enzymes from *Bacillus licheniformis* and their industrial applications)

IT Plant (Embryophyta)
(degrdn. or modification of plant material; pectin degrading enzymes from *Bacillus licheniformis* and their industrial applications)

IT Cellulose pulp
(degrdn. or modification of; pectin degrading enzymes from *Bacillus licheniformis* and their industrial applications)

IT Cleaning solvents
Detergents
Scouring agents
(enzyme-contg.; pectin degrading enzymes from *Bacillus licheniformis* and their industrial applications)

IT **Detergents**
(laundry, enzyme-contg.; pectin degrading enzymes from *Bacillus licheniformis* and their industrial applications)

IT *Bacillus licheniformis*
DNA sequences
Feed additives
Molecular cloning
Nonwoven fabrics
Nucleic acid hybridization
Protein sequences
Textiles
Yarns
(pectin degrading enzymes from *Bacillus licheniformis* and their industrial applications)

IT Gene, microbial
RL: BUU (Biological use, unclassified); PRP (Properties); BIOL (Biological study); USES (Uses)
(pectin degrading enzymes from *Bacillus licheniformis* and their industrial applications)

IT Enzymes, biological studies
RL: BPN (Biosynthetic preparation); CAT (Catalyst use); FFD (Food or feed

use); MOA (Modifier or additive use); PRP (Properties); BIOL (Biological study); PREP (Preparation); USES (Uses)
 (pectolytic; pectin degrading enzymes from *Bacillus licheniformis* and their industrial applications)

IT Fruit and vegetable juices
 Wine
 (processing of; pectin degrading enzymes from *Bacillus licheniformis* and their industrial applications)

IT Digestion, chemical
 (retting; pectin degrading enzymes from *Bacillus licheniformis* and their industrial applications)

IT Paper
 (wastepaper, degrdn. or modification of; pectin degrading enzymes from *Bacillus licheniformis* and their industrial applications)

IT 9015-75-2P, Pectate lyase
 RL: BPN (Biosynthetic preparation); CAT (Catalyst use); FFD (Food or feed use); MOA (Modifier or additive use); PRP (Properties); BIOL (Biological study); PREP (Preparation); USES (Uses)
 (isoenzymes; pectin degrading enzymes from *Bacillus licheniformis* and their industrial applications)

IT 9032-75-1P, Polygalacturonase 9033-35-6P, Pectin lyase 226081-94-3P 226081-98-7P 226082-00-4P 226082-02-6P
 RL: BPN (Biosynthetic preparation); CAT (Catalyst use); FFD (Food or feed use); MOA (Modifier or additive use); PRP (Properties); BIOL (Biological study); PREP (Preparation); USES (Uses)
 (pectin degrading enzymes from *Bacillus licheniformis* and their industrial applications)

IT 226081-89-6 226081-91-0 226081-93-2 226081-95-4
 RL: BUU (Biological use, unclassified); PRP (Properties); BIOL (Biological study); USES (Uses)
 (pectin degrading enzymes from *Bacillus licheniformis* and their industrial applications)

IT 9000-90-2, .alpha.-Amylase 9001-62-1, Lipase 9001-92-7, Protease
 9002-10-2, Phenol oxidase 9003-99-0, Peroxidase 9012-54-8,
 Cellulase 9025-56-3, Hemicellulase 9025-98-3, Pectin methylesterase
 9032-08-0, Glucoamylase 9035-73-8, Oxidase 9037-80-3, Reductase
 9067-74-7, Arabinosidase 9074-98-0, .beta.-Glucanase 9075-68-7,
 Pullulanase 37278-89-0, Xylanase 37329-65-0, Celllobiohydrolase
 39346-28-6, Galactanase 42613-30-9, Ligninase 51377-41-4, Cutinase
 60748-69-8, Mannanase 74191-29-0, Endoglucanase 76901-10-5,
 Xyloglucanase 80146-85-6, Transglutaminase 80498-15-3, Laccase
 131384-64-0, Rhamnogalacturonase 132965-81-2, Pectin acetyl esterase
 RL: CAT (Catalyst use); FFD (Food or feed use); MOA (Modifier or additive use); BIOL (Biological study); USES (Uses)
 (prepn. contg.; pectin degrading enzymes from *Bacillus licheniformis* and their industrial applications)

IT 261154-33-0, 15: PN: WO0164853 PAGE: 59 unclaimed DNA 261154-34-1, 16:
 PN: WO0164853 PAGE: 59 unclaimed DNA 261154-35-2, 17: PN: WO0164853
 PAGE: 59 unclaimed DNA 261154-36-3, 18: PN: WO0164853 PAGE: 59 unclaimed
 DNA 261154-37-4, 19: PN: WO0164853 PAGE: 59 unclaimed DNA 261154-38-5,
 20: PN: WO0164853 PAGE: 59 unclaimed DNA 313083-53-3 313083-54-4
 314327-86-1, 1: PN: US6165769 SEQID: 9 unclaimed DNA 314327-88-3
 314327-89-4 314327-90-7 314327-91-8 314327-92-9 314327-93-0
 314327-94-1
 RL: PRP (Properties)
 (unclaimed nucleotide sequence; pectin degrading enzymes from *Bacillus licheniformis* and their industrial applications)

IT 314327-87-2
 RL: PRP (Properties)
 (unclaimed protein sequence; pectin degrading enzymes from *Bacillus*

licheniformis and their industrial applications)

RE.CNT 11 THERE ARE 11 CITED REFERENCES AVAILABLE FOR THIS RECORD
RE

- (1) Anon; JP 56068393
- (2) Anon; EP 0683228 A2 1995 HCAPLUS
- (3) Anon; EP 0870834 A1 1998 HCAPLUS
- (4) Anon; WO 9845393 1998 HCAPLUS
- (5) Godfrey; J of Applied Bacteriology 1994, V76, P13 HCAPLUS
- (6) Karbassi; Can J Microbiol 1980, V26, P377 HCAPLUS
- (7) Kelly; Can J Microbiol 1978, V24, P1164 HCAPLUS
- (8) Nasser; Biochimie 1990, V72, P689 HCAPLUS
- (9) Sakamoto; FEBS Letters 1996, V398, P269 HCAPLUS
- (10) Stn International; HCAPLUS
- (11) Yoshimitzu, M; Agric Biol Chem 1991, V55(1), P25

L38 ANSWER 11 OF 31 WPIX COPYRIGHT 2002 DERWENT INFORMATION LTD
AN 2001-041149 [05] WPIX

DNC C2001-011996

TI Novel endo-beta-1,4-glucanase useful in various industrial applications including degradation of cellulose-containing biomass, detergent, paper, pulp and textile industries.

DC B04 D16

IN BJORNVAD, M E; SCHUELEIN, M

PA (NOVO) NOVOZYMES AS; (NOVO) NOVO NORDISK AS

CYC 92

PI WO 2000073428 A1 20001207 (200105)* EN 51p C12N009-42
RW: AT BE CH CY DE DK EA ES FI FR GB GH GM GR IE IT KE LS LU MC MW MZ
NL OA PT SD SE SL SZ TZ UG ZW
W: AE AG AL AM AT AU AZ BA BB BG BR BY CA CH CN CR CU CZ DE DK DM DZ
EE ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR KZ, LC LK
LR LS LT LU LV MA MD MG MK MN MW MX MZ NO NZ PL PT RO RU SD SE SG
SI SK SL TJ TM TR TT TZ UA UG UZ VN YU ZA ZW

AU 2000047449 A 20001218 (200118) C12N009-42

ADT WO 2000073428 A1 WO 2000-DK278 20000524; AU 2000047449 A AU 2000-47449
20000524

FDT AU 2000047449 A Based on WO 200073428

PRAI DK 1999-755 19990528

IC ICM C12N009-42

ICS C12N001-20

AB WO 200073428 A UPAB: 20010124

NOVELTY - An enzyme (I) exhibiting endo- beta -1,4-glucanase activity (EC 3.2.1.4) which is encoded by the DNA sequence (II) given in the specification, is new.

DETAILED DESCRIPTION - An enzyme (I) exhibits endo- beta -1,4-glucanase activity (EC 3.2.1.4) and is encoded by the DNA sequence (II) with nucleotide positions 76-1455 of sequence (S1) of 1941 base pairs (bp) given in the specification and has a protein sequence with at least 75% identity to positions 26-485 of a sequence (S2) of 646 amino acids given in the specification. Where the identity is determined by GAP provided in the GCG program package using a GAP creation penalty of 3 and GAP extension penalty of 0.1. (I) is encoded by the endoglucanase encoding portion of the DNA sequence obtainable from the plasmid in Escherichia coli DSM 12805 and is produced by culturing a cell comprising (II).

INDEPENDENT CLAIMS are also included for the following:

(1) an isolated polynucleotide molecule (its complement, species analog or degenerate nucleotide sequence) encoding (I);
(2) an expression vector (III) comprising a transcription promoter, a DNA segment of a polynucleotide encoding (I) and a transcription terminator;

(3) a cultured cell (IV) into which (III) has been introduced;

- (4) preparation (V) of (I);
- (5) an enzyme composition (VI) comprising (I);
- (6) an isolated enzyme having endo- beta -1,4-glucanase activity which is free from homologous inhibitors that is produced by (V); and
- (7) an isolated substantially pure biological culture of the strain *E. coli* DSM 12805.

USE - (I) and (VI) are useful for degradation of cellulose-containing biomass (claimed) and also in detergent, paper and pulp, oil drilling, oil extraction, wine and juice, food ingredients, animal feed or textile industries, in treatment of wooden pulp, for debarking, defibration, fiber modification, bio-polishing process and for improving drainability of paper making pulps. (I) is further useful in detergent compositions for house-hold or industrial laundering of textiles and garments. Polynucleotides encoding (I) are useful as a tool to identify other homologous endoglucanases.

ADVANTAGE - (I) has a high specific activity on carboxy methyl cellulose (CMC) and, in contrast to other endoglucanases, the enzyme is able to degrade highly crystalline cellulose. The optimal temperature of the enzyme is at 60 deg. C and is fully active between pH 5.5 and 9.5. The enzyme can be used for total biomass degradation, which normally would need both cellobiohydrolase(s) (which has very little activity on CMC) and endoglucanase(s).

Dwg.0/0

FS CPI
 FA AB; DCN
 MC CPI: B04-E03E; B04-E08; B04-F10A3E; B04-F10A6E; B04-F10B1E; B04-F10B4E; B04-F10B5E; B04-L01; B04-L05B; B04-L05B0E; D05-H04; D05-H12A; D05-H12E; D05-H14A1; D05-H17A3
 L38 ANSWER 12 OF 31 WPIX COPYRIGHT 2002 DERWENT INFORMATION LTD
 AN 2000-565292 [52] WPIX
 DNC C2000-168359
 TI Novel methods for modifying animal feed using galactanase and novel galactanase enzymes useful for modifying animal feed.
 DC C06 D13 D16
 IN BECH, L; BJORNVAD, M E; CLAUSEN, I G; OSTERGAARD, P R; SCHUELEIN, M; SJOHOLM, C; BJOERNVAD, M E; OESTERGAARD, P R; SJOEHLIN, C
 PA (NOVO) NOVO NORDISK AS; (NOVO) NOVOZYMES AS
 CYC 90
 PI WO 2000047711 A2 20000817 (200052)* EN 76p C12N000-00
 RW: AT BE CH CY DE DK EA ES FI FR GB GH GM GR IE IT KE LS LU MC MW NL
 OA PT SD SE SL SZ TZ UG ZW
 W: AE AL AM AT AU AZ BA BB BG BR BY CA CH CN CR CU CZ DE DK DM EE ES
 FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR KZ LC LK LR LS
 LT LU LV MA MD MG MK MN MW MX NO NZ PL PT RO RU SD SE SG SI SK SL
 TJ TM TR TT TZ UA UG UZ VN YU ZA ZW
 AU 2000025356 A 20000829 (200062) C12N000-00
 US 6331426 B1 20011218 (200205) C12P021-06
 ADT WO 2000047711 A2 WO 2000-DK52 20000208; AU 2000025356 A AU 2000-25356
 20000208; US 6331426 B1 Provisional US 1999-125885P 19990324, Provisional
 US 1999-138445P 19990610, US 2000-502653 20000211
 FDT AU 2000025356 A Based on WO 200047711
 PRAI DK 1999-799 19990607; DK 1999-184 19990211
 IC ICM C12N000-00; C12P021-06
 ICS C12N009-00; C12N009-24; C12N009-26
 AB WO 200047711 A UPAB: 20001018
 NOVELTY - Modifying animal feed comprising adding at least 1 galactanase enzyme comprising at least 1 of 6 consensus sequences ((I)-(VI)) of 8-42 amino acids (aa), given in the specification, is new.
 DETAILED DESCRIPTION - Novel method for modifying animal feed

comprising adding at least 1 galactanase enzyme comprising at least 1 of 6 consensus sequences ((I)-(VI)) of 8-42 aa, given in the specification.

E.g.:

Tyr-Xaa-Xaa-Thr-Xaa-Glu-Xaa-Xaa-Asp-Gly (I);
 Asn-Xaa-Xaa-(Met/Leu)-Phe-Asp-Phe-Xaa-Gly-Xaa-Xaa-Leu-Xaa-Ser (II);
 Ser-Tyr-Tyr-Pro-Xaa-Trp-His-Gly (III);
 Tyr-Asp-(Ser/Ala)-Asn-Gly-Asn-Sly-Tyr-Gly-Gly (IV); and
 Gly-Gly-(Phe/Leu)-Ala-Gly-Glu-Thr-Asp (VI).

Xaa = any amino acid.

INDEPENDENT CLAIMS are also included for the following:

(1) modifying animal feed comprising adding at least galactanase enzyme comprising:

(i) an enzyme produced by *Bacillus circulans* (a sequence of 252 aa given in the specification; (VII)) or *B. agaradhaerens* (a sequence of 245 aa given in the specification; (VIII));

(ii) an enzyme produced by *B. subtilis* (a sequence of 297 aa given in the specification; (IX)) or *B. licheniformis* (a sequence of 399 aa given in the specification; (X)); or

(iii) a sequence with at least 70 % homology to the enzyme of (1.i) or (1.ii), or derived from the enzyme;

(2) modifying animal feed comprising adding at least galactanase enzyme comprising:

(i) an enzyme encoded by a sequence with at least 60 % homology to the sequence from *B. circulans* (756 base pairs (bp) given in the specification; (XI)) or *B. agaradhaerens* (735 bp given in the specification; (XII));

(ii) an enzyme encoded by a sequence with at least 75 % homology to the sequence from *B. subtilis* (891 bp given in the specification; (XIII)) - corrected from the claims, Ed) or *B. licheniformis* (1200 bp given in the specification; (XIV));

(3) modifying animal feed comprising adding at least 1 galactanase encoded by a sequence that hybridizes to (XI)-(XIV);

(4) obtaining at least a part of a DNA sequence encoding a galactanase comprising detecting the sequence using a probe comprising at least 16 nucleotides from 1 of 6 sequences of 24-129 bp ((XV)-(XX));

(5) a polynucleotide comprising:

(i) a sequence as in (XIII);

(ii) a polynucleotide that encodes a polypeptide with at least 70 % identity to (VIII); and

(iii) degenerate sequences of (5.i) and (5.ii);

(6) a polynucleotide comprising:

(i) a sequence as in (XIV);

(ii) a polynucleotide that encodes a polypeptide with at least 70 % identity to (X); and

(iii) degenerate sequences of (6.i) and (6.ii);

(7) an expression vector comprising a sequence as in (5) or (6);

(8) a cell comprising the vector of (7);

(9) producing a galactanase active peptide comprising culturing a cell as in (8) and recovering the peptide;

(10) a galactanase active peptide comprising a sequence that is at least 80 % identical to residues 1-399 of (X);

(11) a galactanase active peptide comprising a sequence that is at least 80 % identical to residues 1-245 of (VIII); and

(12) an enzyme composition comprising a purified polypeptide as in (10) or (11).

E.g.:

TA(C/T) NCN (T/C) (A/G)N ACN N(C/T) (T/G) GA(G/A) (G/C)AN (G/C) (G/C)N
 GA(T/C) GGN (XV)

TCN TAT TAT CCN TNN TGG NCA TGG (XVII)

TAT GAT (T/G)C(A/C) AA(T/C) GGC AAC GG(G/C) TA(T/C) GG(A/C) (XVIII)

GG(A/G) GG(A/C) (T/C) TT GCC GGT GA(A/G) AC(T/G) GAT (XX)
 N = any nucleotide.

USE - The galactanase enzymes are useful for the modification of animal feed (claimed) and in the textile, detergent, wine and juice and cellulose processing industries.

ADVANTAGE - The enzymes obtained and produced have high galactanase activity. Galactanase containing animal feeds have an enhanced nutritional value.

Dwg.0/1

FS CPI
 FA AB; DCN
 MC CPI: C04-C01B; C04-C01C; C04-C01G; C04-E02E; C04-E03E; C04-E05; C04-E08; C04-F0100E; C04-L05A; C04-N03A; C11-A02; D03-G02; D03-G04; D05-A02C; D05-C03C; D05-H12A; D05-H12B; D05-H12D1; D05-H12E; D05-H14; D05-H17A3; D05-H17B3

L38 ANSWER 13 OF 31 WPIX COPYRIGHT 2002 DERWENT INFORMATION LTD
 AN 2000-505754 [45] WPIX
 CR 2000-482817 [41]; 2000-482819 [41]; 2000-482820 [41]; 2000-482821 [41]; 2000-499111 [41]; 2000-499112 [41]; 2000-543165 [41]; 2000-543166 [41]
 DNC C2000-151754
 TI Detergent composition useful in laundry, dish washing and/or hard surface cleaning comprises a **pectate lyase** and a bleach system.
 DC A97 D16 D25 E12 E14 E19
 IN BETTIOL, J P; BUSCH, A; MOESE, R L; SHOWELL, M S; WELLS, E C; ZHU, Y
 PA (PROC) PROCTER & GAMBLE CO
 CYC 91
 PI WO 2000042156 A1 20000720 (200045)* EN 136p C11D003-386
 RW: AT BE CH CY DE DK EA ES FI FR GB GH GM GR IE IT KE LS LU MC MW NL
 OA PT SD SE SL SZ TZ UG ZW
 W: AE AL AM AT AU AZ BA BB BG BR BY CA CH CN CR CU CZ DE DK DM EE ES
 FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR KZ LC LK LR LS
 LT LU LV MA MD MG MK MN MW MX NO NZ PL PT RO RU SD SE SG SI SK SL
 TJ TM TR TT UA UG US UZ VN YU ZA ZW
 AU 2000026105 A 20000801 (200054) C11D003-386
 EP 1141200 A1 20011010 (200167) EN C11D003-386
 R: AL AT BE CH CY DE DK ES FI FR GB GR IE IT LI LT LU LV MC MK NL PT
 RO SE SI
 BR 2000007817 A 20011106 (200175) C11D003-386
 ADT WO 2000042156 A1 WO 2000-US838 20000113; AU 2000026105 A AU 2000-26105
 20000113; EP 1141200 A1 EP 2000-904330 20000113, WO 2000-US838 20000113;
 BR 2000007817 A BR 2000-7817 20000113, WO 2000-US838 20000113
 FDT AU 2000026105 A Based on WO 200042156; EP 1141200 A1 Based on WO
 200042156; BR 2000007817 A Based on WO 200042156
 PRAI WO 1999-US803 19990114; WO 1999-US790 19990114; WO 1999-US800
 19990114; WO 1999-US801 19990114; WO 1999-US802 19990114
 IC ICM C11D003-386
 ICS C11D003-28; C11D003-34; C11D003-39
 AB WO 200042156 A UPAB: 20020114
 NOVELTY - A detergent composition comprises a **pectate lyase** (1) and a bleach system (2). (2) is a metal bleach catalyst (3), a combination of a **peroxygen** source (4) and a bleach booster (5) and/or a diacyl **peroxide** (6). (5) is zwitterionic imines and/or anionic imine polyions having a net negative charge from -1 to -3.

USE - In removal of plant- and dirt-based stains, highly colored food soils/stains, body soils, for superior fabric whiteness maintenance, for removal of highly colored stains and soils from plastic ware, and/or for preventing the staining and/or discoloration of dish ware by highly

colored components (claimed).

ADVANTAGE - The compositions provide superior cleaning performance, especially on plant- and dirt-based stains, highly colored food soils/stains and body soils, and superior whiteness maintenance. The color-safe booster in the composition provide superior cleaning performance in lower water temperatures while providing improved color-safety profiles. The diacyl peroxide in the composition is effective for highly colored stains and soils removal from plastic ware, and further prevents the staining/discoloration of the dish ware by highly colored components.

Dwg.0/0

FS CPI
 FA AB; DCN
 MC CPI: A12-W12A; A12-W12B; D03-D01A; D11-B01; D11-B02; E05-L02B; E05-L03A; E06-D; E06-D02; E06-H; E07-D; E07-H; E10-A04B; E10-A09A; E10-A09B7; E10-A22A; E10-A22D; E10-B01C; E31-E; N05-B; N05-C

L38 ANSWER 14 OF 31 WPIX COPYRIGHT 2002 DERWENT INFORMATION LTD
 AN 2000-499111 [44] WPIX
 CR 2000-482817 [41]; 2000-482819 [41]; 2000-482820 [41]; 2000-482821 [41]; 2000-499112 [41]; 2000-505754 [41]; 2000-543165 [41]; 2000-543166 [41]
 DNC C2000-149767
 TI Detergent composition useful in cleaning fabric, dish ware and/or hard surfaces comprises a pectate lyase and a metal bleach catalyst.
 DC A97 D16 D25 E12 E14 E19
 IN BETTIOL, J P; BUSCH, A; MOESE, R L; SHOWELL, M S; WELLS, E C; ZHU, Y; WELLS, E
 PA (PROC) PROCTER & GAMBLE CO
 CYC 84
 PI WO 2000042150 A1 20000720 (200044)* EN 104p C11D003-386
 RW: AT BE CH CY DE DK EA ES FI FR GB GH GM GR IE IT KE LS LU MC MW NL
 OA PT SD SE SZ UG ZW
 W: AL AM AT AU AZ BA BB BG BR BY CA CH CN CU CZ DE DK EE ES FI GB GD
 GE GH GM HR HU ID IL IN IS JP KE KG KP KR KZ LC LK LR LS LT LU LV
 MD MG MK MN MW MX NO NZ PL PT RO RU SD SE SG SI SK SL TJ TM TR TT
 UA UG US UZ VN YU ZW
 AU 9924564 A 20000801 (200054) C11D003-386
 BR 2000007817 A 20011106 (200175) C11D003-386
 ADT WO 2000042150 A1 WO 1999-US802 19990114; AU 9924564 A AU 1999-24564
 19990114, WO 1999-US802 19990114; BR 2000007817 A BR 2000-7817 20000113,
 WO 2000-US838 20000113
 FDT AU 9924564 A Based on WO 200042150; BR 2000007817 A Based on WO 200042156
 PRAI WO 1999-US802 19990114; WO 1999-US790 19990114; WO 1999-US800
 19990114; WO 1999-US801 19990114; WO 1999-US803 19990114
 IC ICM C11D003-386
 ICS C11D003-28; C11D003-34; C11D003-39
 AB WO 200042150 A UPAB: 20011220
 NOVELTY - A detergent composition comprises a pectate lyase(1) and a metal bleach catalyst (2).

DETAILED DESCRIPTION - An INDEPENDENT CLAIM is included for a method of cleaning a fabric, dish ware and/or hard surface

USE - In cleaning a fabric, dish ware and/or hard surface.

ADVANTAGE - The compositions provide superior cleaning due to synergistic effect, providing cleaning, stain removal, and whiteness maintenance. The composition also delivers outstanding cleaning effect, especially on food colored stains and body soils.

Dwg.0/0

FS CPI
 FA AB; DCN

MC CPI: D05-H17A3; D05-H17B3; D11-B01D; D11-B02; D11-D01A; D11-D01B;
E05-L02B; E05-L03A; N05-A; N05-B

L38 ANSWER 15 OF 31 WPIX COPYRIGHT 2002 DERWENT INFORMATION LTD
AN 2000-329163 [28] WPIX
DNC C2000-099801
TI New modified polypeptides having an attached polymer for reducing immune responses, useful in e.g. **detergents**, cleaning products, skin care products, food or feed products, textile products or pharmaceuticals.
DC A96 B04 D13 D16 D21 D25 F06
IN ANDERSEN, K V; ERNST, S; OLSEN, A A; ROGGEN, E L; VON DER OSTEN, C
PA (NOVO) NOVO-NORDISK AS; (NOVO) NOVOZYMES AS
CYC 90
PI WO 2000022103 A1 20000420 (200028)* EN 107p C12N009-96
RW: AT BE CH CY DE DK EA ES FI FR GB GH GM GR IE IT KE LS LU MC MW NL
OA PT SD SE SL SZ TZ UG ZW
W: AE AL AM AT AU AZ BA BB BG BR BY CA CH CN CR CU CZ DE DK DM EE ES
FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR KZ LC LK LR LS
LT LU LV MA MD MG MK MN MW MX NO NZ PL PT RO RU SD SE SG SI SK SL
TJ TM TR TT TZ UA UG UZ VN YU ZA ZW
AU 9960788 A 20000501 (200036) C12N009-96
EP 1121424 A1 20010808 (200146) EN C12N009-96
R: AL AT BE CH CY DE DK ES FI FR GB GR IE IT LI LT LU LV MC MK NL PT
RO SE SI
ADT WO 2000022103 A1 WO 1999-DK542 19991012; AU 9960788 A AU 1999-60788
19991012; EP 1121424 A1 EP 1999-947261 19991012, WO 1999-DK542 19991012
FDT AU 9960788 A Based on WO 200022103; EP 1121424 A1 Based on WO 200022103
PRAI DK 1999-1418 19991004; DK 1998-1301 19981013
IC ICM C12N009-96
ICA A61K047-48; C11D003-386
ICI A61K047:48, C11D003-386
AB WO 200022103 A UPAB: 20000613
NOVELTY - A polypeptide with reduced immune response, having one or more modified amino acids, where the C alpha -atoms of the amino acids are located less than 15 Angstrom from a ligand bound to the polypeptide, is new.
DETAILED DESCRIPTION - INDEPENDENT CLAIMS are also included for the following:
(1) a method for preparing polypeptides with reduced immune response comprising:
(a) identifying amino acid residues located on the surface of the 3-dimensional structure of a parent polypeptide;
(b) selecting target amino acid residues on the surface of the 3-dimensional structure of the parent polypeptide to be modified;
(c) substituting one or more amino acid residues selected in (b) with other amino acid residues; and/or
(d) coupling polymeric molecules to the amino acid residues of (b) and/or (c); and
(2) a composition comprising the novel modified polypeptide, and ingredients used in industrial products, or pharmaceuticals.
USE - The modified polypeptides can be used for reducing the allergenicity of industrial products, e.g. a **detergent** such as a laundry, dish wash or hard surface cleaning product, including bio-film products or a food or feed product or a textile product (claimed). They can also be used in personal care products, particularly skin care products (claimed). The modified polypeptides can also be used for reducing the immunogenicity of pharmaceuticals (claimed).
ADVANTAGE - The modified polypeptides have reduced immunogenicity or allergenicity while maintaining a high percentage of activity.
Dwg.0/2

FS CPI
 FA AB; DCN
 MC CPI: A12-V01; A12-V04; A12-W09; B04-L01; B04-L03; B04-L04; B04-L05;
 B04-L06; B04-L07; B04-N04; D03-H01T2; D05-H; D08-B09A; D11-B02;
 F03-C; F03-J03

L38 ANSWER 16 OF 31 HCAPLUS COPYRIGHT 2002 ACS DUPLICATE 7
 AN 1999:64911 HCAPLUS
 DN 130:121426
 TI Alkaline xyloglucanases from *Bacillus* suitable for fabric
 detergents
 IN Schulein, Martin; Outtrup, Helle; Jorgensen, Per Lina; Bjornvad, Mads
 Eskelund
 PA Novo Nordisk A/S, Den.
 SO PCT Int. Appl., 87 pp.
 CODEN: PIXXD2
 DT Patent
 LA English
 IC ICM C12N009-42
 ICS C12N009-42; C12R001-07
 CC 7-2 (Enzymes)
 Section cross-reference(s): 3, 46

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 9902663	A1	19990121	WO 1998-DK290	19980701
	W: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, GH, GM, GW, HR, HU, ID, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, UZ, VN, YU, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM RW: GH, GM, KE, LS, MW, SD, SZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG				
	AU 9879085	A1	19990208	AU 1998-79085	19980701
	EP 1002060	A1	20000524	EP 1998-929246	19980701
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, NL, SE, PT, IE, FI				
	BR 9810548	A	20000815	BR 1998-10548	19980701
	JP 2001509377	T2	20010724	JP 2000-502161	19980701
	US 6268197	B1	20010731	US 1998-110959	19980707
PRAI	DK 1997-822	A	19970707		
	DK 1997-1213	A	19971024		
	US 1997-54039	P	19970728		
	US 1997-63694	P	19971028		
	WO 1998-DK290	W	19980701		
AB	A xyloglucanase having a relative xyloglucanase activity of .gtoreq.50% at pH 7 and either no or an insignificant cellulolytic activity is obtainable e.g. from a strain of <i>Bacillus</i> . The xyloglucanase may comprise an amino acid sequence of the mature enzymes isolated from <i>B. licheniformis</i> ATCC 14580 or <i>B. agaradhaerens</i> NCIMB 40482. Genes encoding the xyloglucanases were isolated and sequenced from the 2 <i>Bacillus</i> strains. The xyloglucanases are useful e.g. in cleaning compns. and for treatment of cellulosic fibers.				
ST	xyloglucanase cloning gene sequence detergent <i>Bacillus</i>				
IT	Bacillus (bacterium genus) <i>Bacillus agaradhaerens</i> <i>Bacillus licheniformis</i> Bacteria (Eubacteria) Fungi Gram-positive bacteria (Firmicutes)				

Laundry detergents
 Microorganism
 Molecular cloning
 Protein fermentation
 Yeast
 (alk. xyloglucanases from *Bacillus* suitable for fabric detergents)
 IT Genes (microbial)
 RL: BPN (Biosynthetic preparation); BSU (Biological study, unclassified); PRP (Properties); BIOL (Biological study); PREP (Preparation)
 (alk. xyloglucanases from *Bacillus* suitable for fabric detergents)
 IT Bacteria (Eubacteria)
 (alkalophilic; alk. xyloglucanases from *Bacillus* suitable for fabric detergents)
 IT DNA sequences
 (of alk. xyloglucanase genes from *Bacillus*)
 IT Protein sequences
 (of alk. xyloglucanases from *Bacillus*)
 IT Fabrics
 Flax
 Hemp (fiber)
 Jute fabrics
 Linen fabrics
 (treatment of; alk. xyloglucanases from *Bacillus* suitable for fabric detergents)
 IT Cellulosic fibers
 RL: BPR (Biological process); BIOL (Biological study); PROC (Process)
 (treatment of; alk. xyloglucanases from *Bacillus* suitable for fabric detergents)
 IT 9004-32-4 9004-34-6, Avicel, biological studies
 RL: BPR (Biological process); BIOL (Biological study); PROC (Process)
 (activity on; alk. xyloglucanases from *Bacillus* suitable for fabric detergents)
 IT 76901-10-5P, Xyloglucanase
 RL: BPN (Biosynthetic preparation); CAT (Catalyst use); MOA (Modifier or additive use); PRP (Properties); BIOL (Biological study); PREP (Preparation); USES (Uses)
 (alk. xyloglucanases from *Bacillus* suitable for fabric detergents)
 IT 219853-32-4P 219853-34-6P 219853-74-4P
 RL: BPN (Biosynthetic preparation); CAT (Catalyst use); MOA (Modifier or additive use); PRP (Properties); BIOL (Biological study); PREP (Preparation); USES (Uses)
 (amino acid sequence; alk. xyloglucanases from *Bacillus* suitable for fabric detergents)
 IT 219853-30-2P 219853-31-3P 219853-33-5P
 RL: BPN (Biosynthetic preparation); BUU (Biological use, unclassified); PRP (Properties); BIOL (Biological study); PREP (Preparation); USES (Uses)
 (nucleotide sequence; alk. xyloglucanases from *Bacillus* suitable for fabric detergents)
 IT 9000-90-2, .alpha.-Amylase 9001-62-1, Lipase 9001-92-7, Proteinase
 9002-10-2, Phenol oxidase 9003-99-0, **Peroxidase** 9012-54-8,
 Cellulase 9015-75-2, **Pectate lyase**
 9025-56-3, Hemicellulase 9025-98-3, Pectin methylesterase 9032-08-0,
 Glucoamylase 9032-75-1, Polygalacturonase 9033-35-6,
Pectin lyase 9035-73-8, Oxidase 9037-80-3, Reductase
 9074-98-0, .beta.-Glucanase 9075-68-7, Pullulanase 37278-89-0,
 Xylanase 37329-65-0, Cellobiohydrolase 42613-30-9, Ligninase
 51377-41-4, Cutinase 60748-69-8, Mannanase 80146-85-6,

Transglutaminase 80498-15-3, Laccase 131384-64-0, Rhamnogalacturonase 132965-81-2, Pectin acetyl esterase
 RL: MOA (Modifier or additive use); USES (Uses)
 (textile treatment compn. contg.; alk. xyloglucanases from *Bacillus*
 suitable for fabric detergents)

RE.CNT 5 THERE ARE 5 CITED REFERENCES AVAILABLE FOR THIS RECORD

RE

- (1) Ajinomoto Co Inc; JP 50-68549 A 1993
- (2) Genencor International, Inc; WO 9634092 A2 1996 HCPLUS
- (3) Maclachlan, G; Aust J Plant Physiol 1992, V19, P137 HCPLUS
- (4) Rejon-Palomares, A; Symbiosis 1996, V21, P249 HCPLUS
- (5) Unilever Plc; WO 9317101 A1 1993 HCPLUS

L38 ANSWER 17 OF 31 HCPLUS COPYRIGHT 2002 ACS

AN 1999:795986 HCPLUS

DN 132:46956

TI Bacterial mannanases and their gene sequence and industrial applications
 IN Kauppinen, Markus Sakari; Schulein, Martin; Schnorr, Kirk; Andersen, Lene
 Nonboe; Bjornvad, Mads Eskelund

PA Novo Nordisk A/S, Den.

SO PCT Int. Appl., 242 pp.

CODEN: PIXXD2

DT Patent

LA English

IC ICM C12Q

CC 7-5 (Enzymes)

Section cross-reference(s): 3, 10, 40, 46, 51

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 9964619	A2	19991216	WO 1999-DK314	19990610
	WO 9964619	A3	20000302		
	W: AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM RW: GH, GM, KE, LS, MW, SD, SL, SZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG				
	BR 9911086	A	20010220	BR 1999-11086	19990610
	EP 1086211	A2	20010328	EP 1999-955504	19990610
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, FI				
PRAI	US 1998-111256	A	19980610		
	DK 1998-1340	A	19981020		
	DK 1998-1341	A	19981020		
	US 1998-105970	P	19981028		
	US 1998-106054	P	19981028		
	DK 1998-1725	A	19981223		
	DK 1999-306	A	19990305		
	DK 1999-307	A	19990305		
	DK 1999-308	A	19990305		
	DK 1999-309	A	19990305		
	US 1999-123543	P	19990309		
	US 1999-123623	P	19990310		
	US 1999-123641	P	19990310		
	US 1999-123642	P	19990311		
	WO 1999-DK314	W	19990610		

AB Novel mannanases comprising an amino acid sequence such as that comprising positions 31-330 of the .beta.-1,4-mannanase from *Bacillus* sp. I633, or their homologs or encoded by polynucleotide mols. that encode a polypeptide that is at least 65% identical to the the *Bacillus* I633 amino acid sequence are provided. Mannanases and their genes are also provided from *Bacillus* sp. AAI12, *B. agaradhaerens*, *B. halodurans*, *Bacillus* sp. AA349, *B. clausii*, *B. licheniformis*, *Humicola insolens*, and *Caldicellulosiruptor*. The mannanases are alk. and are useful e.g. in cleaning compns., in a fracturing fluid useful to fracture a subterranean formation (oil drilling), for modifying plant material, and for treatment of cellulosic fibers and fabrics.

ST mannanase gene sequence *Bacillus* *Humicola* *Caldicellulosiruptor*; cleaning compn bacterial mannanase; fabric fiber treatment mannanase; oil drilling fracture mannanase; detergent mannanase

IT *Bacillus* (bacterium genus)
Bacillus agaradhaerens
Bacillus clausii
Bacillus halodurans
Bacillus licheniformis
Bacteria (Eubacteria)
Caldicellulosiruptor
Detergents
Fabric softeners
Filamentous fungi
Humicola insolens
Molecular cloning
Yeast
(bacterial mannanases and their gene sequence and industrial applications)

IT Gene, microbial
RL: BPN (Biosynthetic preparation); BSU (Biological study, unclassified); PRP (Properties); BIOL (Biological study); PREP (Preparation)
(bacterial mannanases and their gene sequence and industrial applications)

IT Coffee products
(beverages, processing of exts. of; bacterial mannanases and their gene sequence and industrial applications)

IT Fibers
RL: BPR (Biological process); BIOL (Biological study); PROC (Process)
(cellulosic, treatment of; bacterial mannanases and their gene sequence and industrial applications)

IT Detergents
(dishwashing; bacterial mannanases and their gene sequence and industrial applications)

IT Enzymes, uses
RL: MOA (Modifier or additive use); USES (Uses)
(enzyme compn. contg.; bacterial mannanases and their gene sequence and industrial applications)

IT Detergents
(laundry; bacterial mannanases and their gene sequence and industrial applications)

IT DNA sequences
(of bacterial mannanase genes)

IT Protein sequences
(of bacterial mannanases)

IT Enzymes, uses
RL: MOA (Modifier or additive use); USES (Uses)
(pectinolytic, enzyme compn. contg.; bacterial mannanases and their gene sequence and industrial applications)

IT *Aspergillus niger*

Aspergillus oryzae
 Bacillus subtilis
 Escherichia coli
 (recombinant expression host; bacterial mannanases and their gene sequence and industrial applications)

IT Cellulose pulp
 Textiles
 Yarns
 (treatment of; bacterial mannanases and their gene sequence and industrial applications)

IT Synthetic fibers
 RL: BPR (Biological process); BIOL (Biological study); PROC (Process)
 (treatment of; bacterial mannanases and their gene sequence and industrial applications)

IT Recycling
 (wastepaper; bacterial mannanases and their gene sequence and industrial applications)

IT 252726-46-8P 252726-48-0P 252726-50-4P 252726-52-6P 252726-53-7P
 252726-57-1P 252726-59-3P 252726-60-6P 252726-62-8P 252726-63-9P
 252726-65-1P 252726-66-2P 252726-68-4P 252726-69-5P 252726-70-8P
 252726-73-1P 252726-75-3P 252726-77-5P 252726-79-7P 252726-81-1P
 252726-83-3P 252726-85-5P 252726-88-8P 252726-90-2P 252726-93-5P
 252727-00-7P 252727-05-2P 252727-07-4P
 RL: BPN (Biosynthetic preparation); BUU (Biological use, unclassified);
 CAT (Catalyst use); NUU (Other use, unclassified); PRP (Properties); BIOL
 (Biological study); PREP (Preparation); USES (Uses)
 (amino acid sequence; bacterial mannanases and their gene sequence and industrial applications)

IT 37288-54-3P, Endo-.beta.-1,4-mannanase
 RL: BPN (Biosynthetic preparation); BUU (Biological use, unclassified);
 NUU (Other use, unclassified); PRP (Properties); BIOL (Biological study);
 PREP (Preparation); USES (Uses)
 (bacterial mannanases and their gene sequence and industrial applications)

IT 9000-90-2, .alpha.-Amylase 9000-92-4, Amylase 9001-62-1, Lipase
 9001-92-7, Proteinase 9002-10-2, Phenol oxidase 9003-99-0,
 Peroxidase 9015-75-2, Pectate lyase
 9025-56-3, Hemicellulase 9025-98-3, Pectin methyl esterase 9032-08-0,
 Glucoamylase 9032-75-1, Pectinase 9033-35-6, Pectin
 lyase 9035-73-8, Oxidase 9037-80-3, Reductase 9074-98-0,
 .beta.-Glucanase 9075-68-7, Pullulanase 37278-89-0, Xylanase
 37329-65-0, Cellobiohydrolase 42613-30-9, Ligninase 51377-41-4,
 Cutinase 76901-10-5, Xyloglucanase 80146-85-6, Transglutaminase
 80498-15-3, Laccase 131384-64-0, Rhamnogalacturonase 132965-81-2,
 Pectin acetyl esterase
 RL: MOA (Modifier or additive use); USES (Uses)
 (enzyme compn. contg.; bacterial mannanases and their gene sequence and industrial applications)

IT 252726-45-7P 252726-47-9P 252726-49-1P 252726-51-5P 252726-54-8P
 252726-58-2P 252726-61-7P 252726-64-0P 252726-67-3P 252726-71-9P
 252726-72-0P 252726-74-2P 252726-76-4P 252726-78-6P 252726-80-0P
 252726-82-2P 252726-84-4P 252726-87-7P
 RL: BPN (Biosynthetic preparation); BSU (Biological study, unclassified);
 PRP (Properties); BIOL (Biological study); PREP (Preparation)
 (nucleotide sequence; bacterial mannanases and their gene sequence and industrial applications)

IT 9000-30-0, Guar gum 9000-40-2, Locust bean gum
 RL: BPR (Biological process); BIOL (Biological study); PROC (Process)
 (treatment of; bacterial mannanases and their gene sequence and industrial applications)

IT 250295-03-5, 21: PN: WO9957255 PAGE: 46 unclaimed DNA 250295-04-6, 22:
 PN: WO9957255 PAGE: 46 unclaimed DNA 250295-05-7, 23: PN: WO9957255
 PAGE: 46 unclaimed DNA 250295-07-9, 24: PN: WO9957255 PAGE: 46 unclaimed
 DNA 250295-08-0, 25: PN: WO9957255 PAGE: 47 unclaimed DNA 250295-09-1,
 26: PN: WO9957255 PAGE: 47 unclaimed DNA 252741-21-2 252741-22-3
 252741-23-4, 42: PN: WO9964619 PAGE: 97 unclaimed DNA 252741-24-5, 43:
 PN: WO9964619 PAGE: 97 unclaimed DNA 252741-25-6, 44: PN: WO9964619
 PAGE: 99 unclaimed DNA 252741-26-7 252741-27-8 252741-28-9
 252741-29-0 252741-30-3 252741-31-4 252741-32-5 252741-33-6
 252741-34-7 252741-37-0
 RL: PRP (Properties)
 (unclaimed nucleotide sequence; bacterial mannanases and their gene
 sequence and industrial applications)

IT 252636-25-2 252636-26-3 252636-27-4 252636-28-5
 RL: PRP (Properties)
 (unclaimed sequence; bacterial mannanases and their gene sequence and
 industrial applications)

L38 ANSWER 18 OF 31 HCAPLUS COPYRIGHT 2002 ACS
 AN 1999:795946 HCAPLUS
 DN 132:32683
 TI Cloning, sequence, purification and industrial application of mannanase of
 Bacillus subtilis
 IN Sreekrishna, Kotikanyadanam; Johnstone, Kevin; Saunders, Charles; Bettiol,
 Jean-luc
 PA Novo Nordisk A/S, Den.
 SO PCT Int. Appl., 56 pp.
 CODEN: PIXXD2
 DT Patent
 LA English
 IC ICM C12N009-42
 CC 7-5 (Enzymes)

Section cross-reference(s): 3, 10, 17, 43, 46

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 9964573	A1	19991216	WO 1999-DK299	19990607
	W: AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM RW: GH, GM, KE, LS, MW, SD, SL, SZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG				
	US 6060299	A	20000509	US 1998-95163	19980610
	AU 9942562	A1	19991230	AU 1999-42562	19990607
	EP 1086210	A1	20010328	EP 1999-955498	19990607
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
PRAI	US 1998-95163	A	19980610		
	WO 1999-DK299	W	19990607		
AB	DNA sequence encoding mannanase (EC 3.2.1.78) of Bacillus subtilis strain 168 and deduced amino acid sequence are disclosed. Prodn., purifn. and properties of the mannanase are reported. The mannanase is useful in cleaning or detergent compns., for modifying plant material, and for treatment of cellulosic fibers.				
ST	Bacillus mannanase gene sequence detergent paper textile				
IT	Surfactants				

(anionic; cloning, sequence, purifn. and industrial application of mannanase of *Bacillus subtilis*)

IT Coffee products
(beverages; cloning, sequence, purifn. and industrial application of mannanase of *Bacillus subtilis*)

IT Surfactants
(cationic; cloning, sequence, purifn. and industrial application of mannanase of *Bacillus subtilis*)

IT Fibers
RL: PEP (Physical, engineering or chemical process); PROC (Process)
(cellulosic; cloning, sequence, purifn. and industrial application of mannanase of *Bacillus subtilis*)

IT *Bacillus* (bacterium genus)
Bacillus subtilis
Bleaching agents
Cellulose pulp
DNA sequences
Detergent builders
Fabric softeners
Molecular cloning
Protein sequences
Textiles
Yarns
(cloning, sequence, purifn. and industrial application of mannanase of *Bacillus subtilis*)

IT Antibodies
RL: BPN (Biosynthetic preparation); PRP (Properties); BIOL (Biological study); PREP (Preparation)
(cloning, sequence, purifn. and industrial application of mannanase of *Bacillus subtilis*)

IT Synthetic fibers
RL: PEP (Physical, engineering or chemical process); PROC (Process)
(cloning, sequence, purifn. and industrial application of mannanase of *Bacillus subtilis*)

IT Detergents
(enzyme-contg.; cloning, sequence, purifn. and industrial application of mannanase of *Bacillus subtilis*)

IT Plant (Embryophyta)
(material; cloning, sequence, purifn. and industrial application of mannanase of *Bacillus subtilis*)

IT Surfactants
(nonionic; cloning, sequence, purifn. and industrial application of mannanase of *Bacillus subtilis*)

IT Enzymes, uses
RL: CAT (Catalyst use); USES (Uses)
(pectin-degrading; cloning, sequence, purifn. and industrial application of mannanase of *Bacillus subtilis*)

IT Paper
(wastepaper; cloning, sequence, purifn. and industrial application of mannanase of *Bacillus subtilis*)

IT Gene, microbial
RL: BSU (Biological study, unclassified); PRP (Properties); BIOL (Biological study)
(ydHT; cloning, sequence, purifn. and industrial application of mannanase of *Bacillus subtilis*)

IT 252307-20-3P
RL: CAT (Catalyst use); PRP (Properties); PUR (Purification or recovery);
PREP (Preparation); USES (Uses)
(amino acid sequence; cloning, sequence, purifn. and industrial application of mannanase of *Bacillus subtilis*)

IT 9000-90-2, *.alpha.-Amylase* 9001-62-1, *Lipase* 9001-92-7, *Protease*
 9002-10-2, *Phenoloxidase* 9003-99-0, *Peroxidase* 9012-54-8,
Cellulase 9015-75-2, *Pectate lyase*
 9025-56-3, *Hemicellulase* 9025-98-3, *Pectin methylesterase* 9032-08-0,
Glucoamylase 9032-75-1, *Pectinase* 9033-35-6, *Pectin*
lyase 9035-73-8, *Oxidase* 9037-80-3, *Reductase* 9074-98-0,
.beta.-Glucanase 9075-68-7, *Pullulanase* 37278-89-0, *Xylanase*
 37329-65-0, *Celllobiohydrolase* 42613-30-9, *Ligninase* 51377-41-4,
Cutinase 74191-29-0, *Endoglucanase* 76901-10-5, *Xyloglucanase*
 80146-85-6, *Transglutaminase* 80498-15-3, *Laccase* 131384-64-0,
Rhamnogalacturonase 132965-81-2, *Pectin acetyl esterase*
 RL: CAT (Catalyst use); MOA (Modifier or additive use); USES (Uses)
 (cloning, sequence, purifn. and industrial application of mannanase of
Bacillus subtilis)
IT 37288-54-3P
 RL: CAT (Catalyst use); PRP (Properties); PUR (Purification or recovery);
 PREP (Preparation); USES (Uses)
 (cloning, sequence, purifn. and industrial application of mannanase of
Bacillus subtilis)
IT 9000-30-0, *Guar gum* 9000-40-2, *Locust bean gum*
 RL: PEP (Physical, engineering or chemical process); PROC (Process)
 (cloning, sequence, purifn. and industrial application of mannanase of
Bacillus subtilis)
IT 252307-08-7
 RL: BSU (Biological study, unclassified); PRP (Properties); BIOL
 (Biological study)
 (nucleotide sequence; cloning, sequence, purifn. and industrial
 application of mannanase of *Bacillus subtilis*)

RE.CNT 12 THERE ARE 12 CITED REFERENCES AVAILABLE FOR THIS RECORD

RE

- (1) Akino; Agric Biol Chem 1998, V52(3), P773
- (2) Akino, T; JP 30-47076 A
- (3) Akino, T; JP 91-0228 HCPLUS
- (4) Kunst, F; Mannan endo-1,4-beta-mannosidase homolog ydhT 1997
- (5) Res Dev Corp of Japan; JP 63-36775 A 1988 HCPLUS
- (6) Sadaie, Y; *Bacillus subtilis* DNA for phoB-rrnE-groESL region, complete cds 1997
- (7) Shingijutsu Kaihatsu, K; JP 63-056289 A HCPLUS
- (8) Shingijutsu Kaihatsu, K; JP 80-51975 A
- (9) Shingijutsu Kaihatsu, K; JP 88-0310 HCPLUS
- (10) Shingijutsu Kaihatsu, K; JP 96-0227
- (11) Toshihiko, O; *Bacillus* sp DNA for endo-beta-1,4-mannanase, complete cds 1997
- (12) Toshihiko, O; *Bacillus* sp gene for beta-mannanase, complete cds 1998

L38 ANSWER 19 OF 31 HCPLUS COPYRIGHT 2002 ACS

AN 1999:359641 HCPLUS

DN 131:29287

TI *Pectate lyases* from *Bacillus* species suitable for
 industrial processes

IN Andersen, Lene Nonboe; Schulein, Martin; Lange, Niels Erik Krebs;
 Bjornvad, Mads Eskelund; Moller, Soren; Glad, Sanne O. Schroder;
 Kauppinen, Markus Sakari; Schnorr, Kirk; Kongsbaek, Lars

PA Novo Nordisk A/S, Den.

SO PCT Int. Appl., 97 pp.

CODEN: PIXXD2

DT Patent

LA English

IC ICM C12N009-88

ICS C12N009-88; C12R001-10; C11D003-386

CC 7-2 (Enzymes)

Section cross-reference(s): 3, 10, 17, 40, 46

FAN.CNT 3

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 9927084	A1	19990603	WO 1998-DK515	19981124
	W: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, UZ, VN, YU, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
	RW: GH, GM, KE, LS, MW, SD, SZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG				
	US 6124127	A	20000926	US 1998-73684	19980506
	US 6258590	B1	20010710	US 1998-184217	19981102
	AU 9914825	A1	19990615	AU 1999-14825	19981124
	EP 1032658	A1	20000906	EP 1998-958820	19981124
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, NL, SE, PT, IE, FI				
	BR 9815007	A	20001003	BR 1998-15007	19981124
	US 6187580	B1	20010213	US 1998-198955	19981124
	JP 2001526022	T2	20011218	JP 2000-522226	19981124
	WO 2000026464	A2	20000511	WO 1999-US24489	19991027
	WO 2000026464	A3	20000810		
	W: AE, AL, AU, BA, BB, BG, BR, CA, CN, CU, CZ, EE, GD, GE, HR, HU, ID, IL, IN, IS, JP, KP, KR, LC, LK, LR, LT, LV, MG, MK, MN, MX, NO, NZ, PL, RO, SG, SI, SK, SL, TR, TT, UA, UZ, VN, YU, ZA, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
	RW: GH, GM, KE, LS, MW, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG				
	BR 9914968	A	20010710	BR 1999-14968	19991027
	EP 1159479	A2	20011205	EP 1999-960137	19991027
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
PRAI	DK 1997-1343	A	19971124		
	DK 1997-1344	A	19971124		
	US 1998-73684	A	19980506		
	US 1998-184217	A	19981102		
	US 1997-67240	P	19971202		
	US 1997-67249	P	19971202		
	WO 1998-DK515	W	19981124		
	WO 1999-US24489	W	19991027		
AB	A novel group of pectate lyases comprising the amino acid sequence Asn-Leu-Asn-Ser-Arg-Val-Pro (NLNSRVP) belonging to Family 1 of polysaccharide lyases have good performance in industrial processes under neutral or alk. conditions such as laundering and textile processing. The pectate lyase may be derivable from <i>Bacillus</i> species. Sequences claimed in the patent were not available in the document.				
ST	pectate lyase gene sequence <i>Bacillus</i> ; food additive pectate lyase <i>Bacillus</i> ; textile processing pectate lyase <i>Bacillus</i> ; detergent pectate lyase <i>Bacillus</i>				
IT	Protein motifs (CBD (cellulose-binding domain), fusion protein with pectin lyase ; pectate lyases from <i>Bacillus</i> species suitable for industrial processes)				
IT	Fibers RL: BPR (Biological process); BIOL (Biological study); PROC (Process)				

(cellulosic, treatment of; **pectate lyases** from *Bacillus* species suitable for industrial processes)

IT Organelle
(cellulosome, fusion protein of *Clostridium thermocellum* S1 subunit with **pectin lyase**; **pectate lyases** from *Bacillus* species suitable for industrial processes)

IT Textiles
(cotton, treatment of; **pectate lyases** from *Bacillus* species suitable for industrial processes)

IT Molecular cloning
(expression system; **pectate lyases** from *Bacillus* species suitable for industrial processes)

IT DNA sequences
(of **pectate lyase** genes from *Bacillus* species suitable for industrial processes)

IT Protein sequences
(of **pectate lyases** from *Bacillus* species suitable for industrial processes)

IT *Bacillus* (bacterium genus)
Bacillus agaradhaerens
Bacillus halodurans
Bacillus licheniformis

Detergents

Food additives
(**pectate lyases** from *Bacillus* species suitable for industrial processes)

IT Fruit and vegetable juices

Wine
(processing of; **pectate lyases** from *Bacillus* species suitable for industrial processes)

IT Cellulose pulp

Textiles

Yarns
(treatment of; **pectate lyases** from *Bacillus* species suitable for industrial processes)

IT 226082-02-6P 226712-45-4P 226712-50-1P, **Lyase, pectate** (*Bacillus* strain AAI12) 226712-52-3P 226712-54-5P, **Lyase, pectate** (*Bacillus* strain I534)
RL: BPN (Biosynthetic preparation); FFD (Food or feed use); MOA (Modifier or additive use); NUU (Other use, unclassified); PRP (Properties); PUR (Purification or recovery); BIOL (Biological study); PREP (Preparation); USES (Uses)
(amino acid sequence; **pectate lyases** from *Bacillus* species suitable for industrial processes)

IT 9000-90-2, **.alpha.-Amylase** 9001-62-1, **Lipase** 9001-92-7, **Proteinase** 9002-10-2, **Phenoloxidase** 9003-99-0, **Peroxidase** 9012-54-8, **Cellulase** 9025-56-3, **Hemicellulase** 9025-98-3, **Pectin methylesterase** 9032-08-0, **Glucoamylase** 9032-75-1, **Polygalacturonase** 9033-35-6, **Pectin lyase** 9035-73-8, **Oxidase** 9037-80-3, **Reductase** 9067-74-7, **Arabinosidase** 9074-98-0, **.beta.-Glucanase** 9075-68-7, **Pullulanase** 37329-65-0, **Celllobiohydrolase** 39346-28-6, **Galactanase** 42613-30-9, **Ligninase** 51377-41-4, **Cutinase** 60748-69-8, **Mannanase** 76901-10-5, **Xyloglucanase** 80146-85-6, **Transglutaminase** 80498-15-3, **Laccase** 131384-64-0, **Rhamnogalacturonase** 132965-81-2, **Pectin acetylesterase**
RL: FFD (Food or feed use); MOA (Modifier or additive use); NUU (Other use, unclassified); BIOL (Biological study); USES (Uses)
(compr. contg.; **pectate lyases** from *Bacillus* species suitable for industrial processes)

IT 226087-36-1DP, **pectate lyases** contg. 226087-37-2DP,

pectate lyases contg. 226087-46-3DP, pectate
 lyases contg. 226087-49-6DP, pectate lyases
 contg.

RL: BPN (Biosynthetic preparation); FFD (Food or feed use); MOA (Modifier or additive use); NUU (Other use, unclassified); PRP (Properties); BIOL (Biological study); PREP (Preparation); USES (Uses)
 (pectate lyases from *Bacillus* species suitable for industrial processes)

IT 9015-75-2P, Pectate lyase

RL: BPN (Biosynthetic preparation); FFD (Food or feed use); MOA (Modifier or additive use); NUU (Other use, unclassified); PRP (Properties); PUR (Purification or recovery); BIOL (Biological study); PREP (Preparation); USES (Uses)
 (pectate lyases from *Bacillus* species suitable for industrial processes)

RE.CNT 8 THERE ARE 8 CITED REFERENCES AVAILABLE FOR THIS RECORD

RE

- (1) Agency of Ind Sci & Technology; JP 56068393 A
- (2) Han; J Microbiol Biotechnol 1992, V2(4), P260 HCPLUS
- (3) Hohnen Oil KK; JP 63146790 A HCPLUS
- (4) KAO Corporation; EP 0870834 A1 1998 HCPLUS
- (5) Kelly, C; Canadian journal of microbiology 1979, V24, P1164
- (6) Liao, C; EMBL Database Genbank/DDBJ accession no L41673 1996
- (7) Miyazaki, Y; Agric Biol Chem 1991, V55(1), P25 HCPLUS
- (8) OJI Paper Co; JP 2200191 A

L38 ANSWER 20 OF 31 HCPLUS COPYRIGHT 2002 ACS

AN 1999:359640 HCPLUS

DN 131:15715

TI Pectin-degrading enzymes from *Bacillus licheniformis* and their industrial applications

IN Andersen, Lene Nonboe; Schulein, Martin; Lange, Niels Erik Krebs; Bjornvad, Mads Eskelund; Schnorr, Kirk

PA Novo Nordisk A/S, Den.

SO PCT Int. Appl., 94 pp.

CODEN: PIXXD2

DT Patent

LA English

IC ICM C12N009-88

ICS C12N009-88; C12R001-10; C11D003-386

CC 7-2 (Enzymes)

Section cross-reference(s): 3, 10, 17, 40, 46

FAN.CNT 3

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 9927083	A1	19990603	WO 1998-DK514	19981124
	W: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, UZ, VN, YU, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
	RW: GH, GM, KE, LS, MW, SD, SZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG				
	US 6124127	A	20000926	US 1998-73684	19980506
	AU 9914339	A1	19990615	AU 1999-14339	19981124
	EP 1032657	A1	20000906	EP 1998-958214	19981124
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, NL, SE, PT, IE, FI				
	BR 9815015	A	20001003	BR 1998-15015	19981124
	US 6187580	B1	20010213	US 1998-198955	19981124

JP 2001524310	T2 20011204	JP 2000-522225	19981124
PRAI DK 1997-1344	A 19971124		
US 1998-73684	A 19980506		
DK 1997-1343	A 19971124		
US 1997-67240	P 19971202		
US 1997-67249	P 19971202		
WO 1998-DK514	W 19981124		

AB Pectin-degrading enzymes derived from or endogenous to *Bacillus licheniformis* or other *Bacillus* species which are 99% homologous to *Bacillus Licheniformis* based on aligned 16S rDNA sequences have optimum activity at pH higher than 8. The pectin-degrading enzymes belong to the enzyme classes **pectate lyases** (EC 4.2.2.2), **pectin lyases** (EC 4.2.2.10), and **polygalacturonases** (EC 3.2.1.15) and are useful in industrial processes under alk. conditions such as in textile processing and as an active ingredient, e.g. in laundry detergents and hard surface cleaning products. Gene and deduced amino acid sequences are provided for two **pectate lyases**, a **pectin lyase**, and a **polygalacturonase**.

ST pectin degrading enzyme *Bacillus*; **lyase pectate**
pectin *Bacillus*; **polygalacturonase** *Bacillus*; sequence **pectin** degrading enzyme gene *Bacillus*

IT Protein motifs
(CBD (cellulose-binding domain), fusion proteins with; pectin-degrading enzymes from *Bacillus licheniformis* and their industrial applications)

IT Fibers
RL: BPR (Biological process); BIOL (Biological study); PROC (Process) (cellulosic; pectin-degrading enzymes from *Bacillus licheniformis* and their industrial applications)

IT Organelle
(cellulosome, fusion protein with cellulose-binding domain of S1 subunit of; pectin-degrading enzymes from *Bacillus licheniformis* and their industrial applications)

IT Textiles
(cotton; pectin-degrading enzymes from *Bacillus licheniformis* and their industrial applications)

IT Molecular cloning
(expression system; pectin-degrading enzymes from *Bacillus licheniformis* and their industrial applications)

IT DNA sequences
(of genes encoding pectin-degrading enzymes from *Bacillus licheniformis*)

IT Protein sequences
(of pectin-degrading enzymes from *Bacillus licheniformis*)

IT *Bacillus licheniformis*
Cellulose pulp
Detergents
Feed additives
Yarns
(pectin-degrading enzymes from *Bacillus licheniformis* and their industrial applications)

IT Gene, microbial
RL: BOC (Biological occurrence); BPN (Biosynthetic preparation); FFD (Food or feed use); MOA (Modifier or additive use); NUU (Other use, unclassified); PRP (Properties); BIOL (Biological study); OCCU (Occurrence); PREP (Preparation); USES (Uses)
(pectin-degrading enzymes from *Bacillus licheniformis* and their industrial applications)

IT Enzymes, biological studies
RL: BOC (Biological occurrence); BPN (Biosynthetic preparation); FFD (Food or feed use); MOA (Modifier or additive use); NUU (Other use,

unclassified); PRP (Properties); BIOL (Biological study); OCCU (Occurrence); PREP (Preparation); USES (Uses)
 (pectolytic; pectin-degrading enzymes from *Bacillus licheniformis* and their industrial applications)

IT Surfactants
 (prepn. contg.; pectin-degrading enzymes from *Bacillus licheniformis* and their industrial applications)

IT Fruit and vegetable juices
 Wine
 (processing of; pectin-degrading enzymes from *Bacillus licheniformis* and their industrial applications)

IT Textiles
 (treatment or modification of; pectin-degrading enzymes from *Bacillus licheniformis* and their industrial applications)

IT 226081-90-9P 226081-92-1P 226081-94-3P 226081-96-5P 226081-98-7P
 226082-00-4P 226082-02-6P 226082-03-7P
 RL: BOC (Biological occurrence); BPN (Biosynthetic preparation); FFD (Food or feed use); MOA (Modifier or additive use); NUU (Other use, unclassified); PRP (Properties); BIOL (Biological study); OCCU (Occurrence); PREP (Preparation); USES (Uses)
 (amino acid sequence; pectin-degrading enzymes from *Bacillus licheniformis* and their industrial applications)

IT 226081-89-6P 226081-91-0P 226081-93-2P 226081-95-4P 226081-97-6P
 226081-99-8P 226082-01-5P
 RL: BOC (Biological occurrence); BPN (Biosynthetic preparation); FFD (Food or feed use); MOA (Modifier or additive use); NUU (Other use, unclassified); PRP (Properties); BIOL (Biological study); OCCU (Occurrence); PREP (Preparation); USES (Uses)
 (nucleotide sequence; pectin-degrading enzymes from *Bacillus licheniformis* and their industrial applications)

IT 9015-75-2P, **Pectate lyase** 9032-75-1P,
Polygalacturonase 9033-35-6P, **Pectin lyase**
 RL: BOC (Biological occurrence); BPN (Biosynthetic preparation); FFD (Food or feed use); MOA (Modifier or additive use); NUU (Other use, unclassified); PRP (Properties); BIOL (Biological study); OCCU (Occurrence); PREP (Preparation); USES (Uses)
 (pectin-degrading enzymes from *Bacillus licheniformis* and their industrial applications)

IT 9000-90-2, **.alpha.-Amylase** 9001-62-1, **Lipase** 9001-92-7, **Proteinase**
 9002-10-2, **Phenoloxidase** 9003-99-0, **Peroxidase** 9012-54-8,
Cellulase 9025-56-3, **Hemicellulase** 9025-98-3, **Pectin methylesterase**
 9032-08-0, **Glucoamylase** 9035-73-8, **Oxidase** 9037-80-3, **Reductase**
 9067-74-7, **Arabinosidase** 9074-98-0, **.beta.-Glucanase** 9075-68-7,
Pullulanase 37278-89-0, **Xylanase** 37329-65-0, **Cellobiohydrolase**
 39346-28-6, **Galactanase** 42613-30-9, **Ligninase** 51377-41-4, **Cutinase**
 60748-69-8, **Mannanase** 76901-10-5, **Xyloglucanase** 80146-85-6,
Transglutaminase 80498-15-3, **Laccase** 131384-64-0, **Rhamnogalacturonase**
 132965-81-2, **Pectin acetyl esterase**
 RL: **BUU** (Biological use, unclassified); **NUU** (Other use, unclassified);
BIOL (Biological study); **USES** (Uses)
 (prepn. contg.; pectin-degrading enzymes from *Bacillus licheniformis* and their industrial applications)

RE.CNT 12 THERE ARE 12 CITED REFERENCES AVAILABLE FOR THIS RECORD

RE

- (1) Agency of Ind SCI & Technology; JP 56131376 A HCAPLUS
- (2) Agency of Ind Sci & Technology; JP 56068393 A
- (3) Ciba-Geigy AG; EP 0683228 A2 1995 HCAPLUS
- (4) Godfrey, V; Journal of Applied Bacteriology 1994, V76, P13 HCAPLUS
- (5) Han; J Microbiol Biotechnol 1992, V2(4), P260 HCAPLUS
- (6) Hohnen Oil KK; JP 63146790 A HCAPLUS

- (7) KAO Corporation; EP 0870834 A1 1998 HCAPLUS
- (8) Kao Corporation; WO 9845393 A2 1998 HCAPLUS
- (9) Kelly, C; Canadian journal of microbiology 1979, V24, P1164
- (10) Liao, C; EMBL Database Genbank/DDBJ accession no L41673 1996
- (11) Miyazaki, Y; Agric Biol Chem 1991, V55(1), P25 HCAPLUS
- (12) Sakamoto, T; FEBS Letters 1996, V398, P269 HCAPLUS

L38 ANSWER 21 OF 31 HCAPLUS COPYRIGHT 2002 ACS

AN 1999:48789 HCAPLUS

DN 130:106938

TI Cloning and characterization of endo-.beta.-1,4-glucanase from *Saccharothrix australiensis* and its use in cleaning compositions

IN Bjornvad, Mads Eskelund; Hatakeyama, Mariko; Schulein, Martin; Nielsen, Jack Bech

PA Novo Nordisk A/S, Den.

SO PCT Int. Appl., 82 pp.

CODEN: PIXXD2

DT Patent

LA English

IC ICM C12N009-42

CC 7-2 (Enzymes)

Section cross-reference(s): 3, 46

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 9901543	A1	19990114	WO 1998-DK286	19980630
	W: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, GH, GM, GW, HU, ID, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, UZ, VN, YU, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
	RW: GH, GM, KE, LS, MW, SD, SZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG				
	AU 9879082	A1	19990125	AU 1998-79082	19980630
	EP 1002059	A1	20000524	EP 1998-929243	19980630
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, NL, SE, PT, IE, FI				
	US 6207436	B1	20010327	US 1998-109841	19980702
PRAI	DK 1997-812	A	19970704		
	DK 1997-846	A	19970711		
	US 1997-53506	P	19970723		
	WO 1998-DK286	W	19980630		
AB	An enzyme prepn. comprising an enzyme having endo-.beta.-1,4-glucanase activity is provided from or endogeneous to a strain belonging to the genus <i>Saccharothrix</i> such as <i>S. australiensis</i> IFO 14444. The pH optimum of the enzyme was 8.0, and >50% relative activity was obtained between pH 6.5 and 9.0; its Km, Vmax, and dcat for phosphoric-acid swollen cellulose were calcd. An isolated DNA encoding the enzyme or enzyme core (the catalytically active domain of the enzyme) exhibiting endo-.beta.-1,4-glucanase activity is also provided. The expressed endoglucanase is useful in a detergent or fabric softener compn. or in the textile industry for improving the properties of cellulosic fibers or fabric or for providing a stone-washed look of denim. Tensile strength loss is induced by treating fabric with the endo-.beta.-1,4-glucanase from <i>S. australiensis</i> .				
ST	cellulase characterization <i>Saccharothrix</i> ; sequence endoglucanase gene <i>Saccharothrix</i> ; fabric treatment cellulase <i>Saccharothrix</i>				
IT	Functional sites (enzyme) (CBD (cellulose-binding domain); cloning and characterization of endo-.beta.-1,4-glucanase from <i>Saccharothrix australiensis</i> and its use				

in cleaning compns.)

IT Actinomycetes
Bacteria (Eubacteria)
Fabric softeners
Gram-positive bacteria (Firmicutes)
Laundry detergents
Molecular cloning
Pseudonocardiaceae
Saccharothrix
Saccharothrix aerocolonigenes
Saccharothrix australiensis
Saccharothrix coeruleofusca
Saccharothrix cryophilis
Saccharothrix flava
Saccharothrix longispora
Saccharothrix mutabilis capreolus
Saccharothrix mutabilis mutabilis
Saccharothrix syringae
Saccharothrix texensis
Saccharothrix waywayandensis
(cloning and characterization of endo-.beta.-1,4-glucanase from
Saccharothrix australiensis and its use in cleaning compns.)

IT Bacillus (bacterium genus)
Bacillus latus
Bacillus subtilis
Escherichia coli
Pseudomonas
Pseudomonas fluorescens
Pseudomonas mendocina
Saccharomyces
Saccharomyces cerevisiae
Streptomyces
(recombinant host; cloning and characterization of endo-.beta.-1,4-
glucanase from Saccharothrix australiensis and its use in cleaning
compns.)

IT 219675-46-4P
RL: BAC (Biological activity or effector, except adverse); BPN
(Biosynthetic preparation); NUU (Other use, unclassified); PRP
(Properties); BIOL (Biological study); PREP (Preparation); USES (Uses)
(amino acid sequence; cloning and characterization of
endo-.beta.-1,4-glucanase from Saccharothrix australiensis and its use
in cleaning compns.)

IT 219675-48-6P
RL: BAC (Biological activity or effector, except adverse); BPN
(Biosynthetic preparation); NUU (Other use, unclassified); PRP
(Properties); BIOL (Biological study); PREP (Preparation); USES (Uses)
(cellulose-binding domain; cloning and characterization of
endo-.beta.-1,4-glucanase from Saccharothrix australiensis and its use
in cleaning compns.)

IT 9012-54-8P, Endo-.beta.-1,4-glucanase
RL: BAC (Biological activity or effector, except adverse); BPN
(Biosynthetic preparation); NUU (Other use, unclassified); PRP
(Properties); BIOL (Biological study); PREP (Preparation); USES (Uses)
(cloning and characterization of endo-.beta.-1,4-glucanase from
Saccharothrix australiensis and its use in cleaning compns.)

IT 9000-90-2, .alpha.-Amylase 9001-62-1, Lipase 9002-10-2, Phenol oxidase
9003-99-0, Peroxidase 9015-75-2, Pectate
lyase 9025-56-3, Hemicellulase 9025-98-3, Pectin
methylesterase 9032-08-0, Glucoamylase 9032-75-1, Pectinase
9033-35-6, Pectin lyase 9035-73-8, Oxidase

9037-80-3, Reductase 9074-98-0, .beta.-Glucanase 9075-68-7, Pullulanase 37278-89-0, Xylanase 37329-65-0, Cellobiohydrolase 42613-30-9, Ligninase 51377-41-4, Cutinase 60748-69-8, Mannanase 76901-10-5, Xyloglucanase 80146-85-6, Transglutaminase 80498-15-3, Laccase 131384-64-0, Rhamnogalacturonase 132965-81-2, Pectin acetylesterase

RL: MOA (Modifier or additive use); USES (Uses)

(fabric treatment with compn. contg. cellulase and; cloning and characterization of endo-.beta.-1,4-glucanase from *Saccharothrix australiensis* and its use in cleaning compns.)

IT 9001-92-7, Proteinase

RL: NUU (Other use, unclassified); USES (Uses)

(fabric treatment with compn. contg. cellulase and; cloning and characterization of endo-.beta.-1,4-glucanase from *Saccharothrix australiensis* and its use in cleaning compns.)

IT 219675-45-3 219675-47-5 219675-49-7

RL: BSU (Biological study, unclassified); PRP (Properties); BIOL (Biological study)

(nucleotide sequence; cloning and characterization of endo-.beta.-1,4-glucanase from *Saccharothrix australiensis* and its use in cleaning compns.)

RE.CNT 2 THERE ARE 2 CITED REFERENCES AVAILABLE FOR THIS RECORD

RE

(1) Anthony, R; US 5643791 A 1997 HCPLUS

(2) Gurdev, S; Applied and Environmental Microbiology 1988, V54(10), P2521

L38 ANSWER 22 OF 31 HCPLUS COPYRIGHT 2002 ACS

AN 1998:479608 HCPLUS

DN 129:91432

TI Cloning and expression of heat-stable bacterial endoglucanase gene and use of enzyme in industrial processes

IN Schulein, Martin; Bjornvad, Mads Eskelund; Norrevang, Iben Angelica

PA Novo Nordisk A/S, Den.

SO PCT Int. Appl., 53 pp.

CODEN: PIXXD2

DT Patent

LA English

IC ICM C12N009-42

ICS C12N015-53; C12N009-42; C12R001-45

CC 3-3 (Biochemical Genetics)

Section cross-reference(s): 7, 10, 16, 17, 40, 46

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 9828410	A1	19980702	WO 1997-DK583	19971219
	W: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, GH, GM, GW, HU, ID, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, UZ, VN, YU, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, RW: GH, GM, KE, LS, MW, SD, SZ, UG, ZW, AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG				
	AU 9878735	A1	19980717	AU 1998-78735	19971219
	EP 956348	A1	19991117	EP 1997-948752	19971219
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, NL, SE, PT, IE, FI				
	CN 1240478	A	20000105	CN 1997-180775	19971219
	BR 9713780	A	20000321	BR 1997-13780	19971219
	US 6043075	A	20000328	US 1997-995280	19971219
	JP 2001507221	T2	20010605	JP 1998-528260	19971219

PRAI DK 1996-1483 A 19961220
WO 1997-DK583 W 19971219

AB An enzyme prepn. comprising an endo-1,4-.beta.-glucanase having optimum activity at a temp. above 85.degree. which is endogenous to a strain belonging to the Gram pos. bacteria, e.g., the strain Dictyoglomus DSM 6262, or which exhibits an activity towards CM-cellulose (CMC assay) at 70.degree. and pH 10 which is higher than 50% relative to the activity at 70.degree. and the optimum pH; and a DNA construct comprising a DNA sequence encoding the endo-1,4-.beta.-glucanase are disclosed. The enzyme is useful, e.g., in the textile industry for improving the properties of cellulosic fibers or fabric or for providing a stone-washed look of denim; or in industrial cleaning processes; or in heat extruded polymeric material; or in the conversion of biomass to sugars; or in the prodn. of alc.; or for predigestion of, e.g., grains used in feed prodn.; or in the prodn. of instant coffee or similar extn. processes. The Dictyoglomus cellulase gene was cloned, sequenced, and expressed in *Bacillus subtilis*. The recombinant enzyme was used for biopolishing cotton fabric.

ST sequence Dictyoglomus endoglucanase gene; cellulosic fiber fabric treatment Dictyoglomus cellulase

IT Cleaning

Molecular cloning
(cloning and expression of heat-stable bacterial endoglucanase gene and use of enzyme in industrial processes)

IT Carbohydrates, preparation

RL: BMF (Bioindustrial manufacture); BIOL (Biological study); PREP (Preparation)

(conversion of biomass to; cloning and expression of heat-stable bacterial endoglucanase gene and use of enzyme in industrial processes)

IT Biomass

(conversion to sugars of; cloning and expression of heat-stable bacterial endoglucanase gene and use of enzyme in industrial processes)

IT *Aspergillus*

Aspergillus oryzae
Bacillus (bacterium genus)

Bacillus lentus

Bacillus licheniformis

Bacillus liquefaciens

Bacillus subtilis

Escherichia coli

Filamentous fungi

Fusarium

Fusarium graminearum

Saccharomyces

Saccharomyces cerevisiae

Trichoderma

Trichoderma reesei

(endoglucanase gene cloning/expression in; cloning and expression of heat-stable bacterial endoglucanase gene and use of enzyme in industrial processes)

IT *Clostridium*

Dictyoglomus

Gram-positive bacteria (Firmicutes)

(endoglucanase of; cloning and expression of heat-stable bacterial endoglucanase gene and use of enzyme in industrial processes)

IT Genes (microbial)

RL: BUU (Biological use, unclassified); PRP (Properties); BIOL (Biological study); USES (Uses)

(for endoglucanase; cloning and expression of heat-stable bacterial endoglucanase gene and use of enzyme in industrial processes)

IT Polymers, preparation

RL: IMF (Industrial manufacture); PREP (Preparation)
(heat-extruded; cloning and expression of heat-stable bacterial
endoglucanase gene and use of enzyme in industrial processes)

IT Fabrics
(improvement of properties of; cloning and expression of heat-stable
bacterial endoglucanase gene and use of enzyme in industrial processes)

IT Cellulosic fibers
RL: PRP (Properties)
(improvement of properties of; cloning and expression of heat-stable
bacterial endoglucanase gene and use of enzyme in industrial processes)

IT DNA sequences
(of endo-1,4-.beta.-glucanase gene of *Dictyoglomus* DSM 6262)

IT Protein sequences
(of endo-1,4-.beta.-glucanase of *Dictyoglomus* DSM 6262)

IT Feed
(predigestion of grain for; cloning and expression of heat-stable
bacterial endoglucanase gene and use of enzyme in industrial processes)

IT Cereal (grain)
(predigestion of; cloning and expression of heat-stable bacterial
endoglucanase gene and use of enzyme in industrial processes)

IT Instant coffee
(prepn. of; cloning and expression of heat-stable bacterial
endoglucanase gene and use of enzyme in industrial processes)

IT 209675-69-4P, Cellulase (*Dictyoglomus* strain DSM-6262)
RL: BAC (Biological activity or effector, except adverse); CAT (Catalyst
use); FFD (Food or feed use); NUU (Other use, unclassified); PRP
(Properties); PUR (Purification or recovery); BIOL (Biological study);
PREP (Preparation); USES (Uses)
(amino acid sequence; cloning and expression of heat-stable bacterial
endoglucanase gene and use of enzyme in industrial processes)

IT 9012-54-8P, e.c. 3.2.1.4
RL: BAC (Biological activity or effector, except adverse); CAT (Catalyst
use); FFD (Food or feed use); NUU (Other use, unclassified); PRP
(Properties); PUR (Purification or recovery); BIOL (Biological study);
PREP (Preparation); USES (Uses)
(cloning and expression of heat-stable bacterial endoglucanase gene and
use of enzyme in industrial processes)

IT 64-17-5P, Ethanol, preparation
RL: BMF (Bioindustrial manufacture); BIOL (Biological study); PREP
(Preparation)
(cloning and expression of heat-stable bacterial endoglucanase gene and
use of enzyme in industrial processes)

IT 9000-92-4, Amylase 9001-62-1, Lipase 9001-92-7, Protease 9003-99-0,
Peroxidase 9015-75-2, Pectate lyase
9025-98-3, Pectin methylesterase 9032-75-1, Polygalacturonase
9033-35-6, Pectin lyase 37278-89-0, Xylanase
37325-54-5, Arabinanase 37329-65-0, Celllobiohydrolase 39346-28-6,
Galactanase 51377-41-4, Cutinase 60748-69-8, Mannanase 74191-29-0,
Endoglucanase 80146-85-6, Transglutaminase 80498-15-3, Laccase
131384-64-0, Rhamnogalacturonase 132965-81-2, Pectin acetyl esterase
RL: BUU (Biological use, unclassified); NUU (Other use, unclassified);
BIOL (Biological study); USES (Uses)
(enzyme compn. contg. endoglucanase and; cloning and expression of
heat-stable bacterial endoglucanase gene and use of enzyme in
industrial processes)

IT 209675-68-3
RL: BUU (Biological use, unclassified); PRP (Properties); BIOL (Biological
study); USES (Uses)
(nucleotide sequence; cloning and expression of heat-stable bacterial
endoglucanase gene and use of enzyme in industrial processes)

L38 ANSWER 23 OF 31 HCAPLUS COPYRIGHT 2002 ACS
 AN 1998:163676 HCAPLUS
 DN 128:214198
 TI Cloning and gene sequence of novel endoglucanases from *Cellvibrio mixtus* and *C. gilvus*
 IN Bjornvad, Mads Eskelund; Nielsen, Preben
 PA Novo Nordisk A/S, Den.; Bjornvad, Mads Eskelund; Nielsen, Preben
 SO PCT Int. Appl., 118 pp.
 CODEN: PIXXD2
 DT Patent
 LA English
 IC ICM C12N009-42
 CC 3-3 (Biochemical Genetics)
 Section cross-reference(s): 7, 10, 46

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 9808940	A1	19980305	WO 1997-DK348	19970826
	W: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, GH, HU, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
	RW: GH, KE, LS, MW, SD, SZ, UG, ZW, AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG				
	AU 9739389	A1	19980319	AU 1997-39389	19970826

PRAI DK 1996-893 19960826
 DK 1996-1015 19960917
 WO 1997-DK348 19970826

OS MARPAT 128:214198

AB An enzyme prep. consisting essentially of an endo-.beta.-1,4-glucanase (EC 3.2.1.4) derived from the bacterial genera *Cellvibrio mixtus* or *Cellvibrio gilvus* is produced by recombinant techniques using a cloned DNA sequence encoding the enzyme. Endo-.beta.-1,4-glucanase from *C. mixtus* DM 1523 comprises a gene-deduced sequence of 527 amino acids, including a signal peptide of 32 amino acid residues, a cellulose-binding domain belonging to family IIa (residues 33-134), a serine-rich linker (135-185), a cellulose-binding domain belonging to family X (186-234), a second serine-rich linker (235-277), and a catalytic domain (residues 278 to the end) belonging to family 45 of the glycosyltransferases. The endo-.beta.-1,4-glucanase has 2 conserved regions, a first amino acid sequence consisting of 15 amino acid residues having sequence and a second amino acid sequence consisting of 6 amino acid residues having sequence, and is useful in industrial application conventionally using cellulolytic enzymes. Techniques are described for constructing a hybrid endoglucanase comprising the *C. mixtus* cel45 core with *Humicola insolens* EG V linker and CBD, and for transformation and expression of the *Cellvibrio* enzyme in *Pseudomonas fluorescens* and *P. cepacia*.

ST endoglucanase gene sequence cloning *Cellvibrio*; cellulase gene sequence cloning *Cellvibrio*

IT *Cellvibrio gilvus*
Cellvibrio mixtus
 Enzyme kinetics
 Laundry detergents
 Molecular cloning

(cloning and gene sequence of novel endoglucanases from *Cellvibrio mixtus* and *C. gilvus*)

IT Genes (microbial)

RL: BPN (Biosynthetic preparation); PRP (Properties); BIOL (Biological study); PREP (Preparation)
 (cloning and gene sequence of novel endoglucanases from *Cellvibrio mixtus* and *C. gilvus*)

IT Cell wall (plant)
 Plant (Embryophyta)
 (degrdn. of plant material by enzymic compns.; cloning and gene sequence of novel endoglucanases from *Cellvibrio mixtus* and *C. gilvus*)

IT *Humicola insolens*
 (hybrid endoglucanase construction from *Humicola* and *Cellvibrio*; cloning and gene sequence of novel endoglucanases from *Cellvibrio mixtus* and *C. gilvus*)

IT *Pseudomonas cellulosa*
 (hybrid endoglucanase construction from *Humicola* and *Pseudomonas*; cloning and gene sequence of novel endoglucanases from *Cellvibrio mixtus* and *C. gilvus*)

IT DNA sequences
 (of endoglucanase genes from *Cellvibrio mixtus* and *C. gilvus*)

IT Protein sequences
 (of endoglucanases from *Cellvibrio mixtus* and *C. gilvus*)

IT *Burkholderia cepacia*
Pseudomonas fluorescens
 (transformation and expression of endoglucanase in; cloning and gene sequence of novel endoglucanases from *Cellvibrio mixtus* and *C. gilvus*)

IT 204338-43-2P 204338-45-4P 204338-46-5P 204338-49-8P 204338-51-2P
 204338-53-4P
 RL: BAC (Biological activity or effector, except adverse); BPN (Biosynthetic preparation); PRP (Properties); BIOL (Biological study); PREP (Preparation)
 (amino acid sequence; cloning and gene sequence of novel endoglucanases from *Cellvibrio mixtus* and *C. gilvus*)

IT 9012-54-8P, Cellulase
 RL: BAC (Biological activity or effector, except adverse); BPN (Biosynthetic preparation); PRP (Properties); BIOL (Biological study); PREP (Preparation)
 (cloning and gene sequence of novel endoglucanases from *Cellvibrio mixtus* and *C. gilvus*)

IT 9000-92-4, Amylase 9001-62-1, Lipase 9001-92-7, Proteinase
 9003-99-0, Peroxidase 9015-75-2, Pectate
 lyase 9025-98-3, Pectin methylesterase 9032-75-1,
 Polygalacturonase 9033-35-6, Pectin lyase
 37278-89-0, Xylanase 37325-54-5, Arabinanase 37329-65-0,
 Cellobiohydrolase 39346-28-6, Galactanase 51377-41-4, Cutinase
 74191-29-0, Endoglucanase 80146-85-6, Transglutaminase 80498-15-3,
 Laccase 131384-64-0, Rhamnogalacturonase 132965-81-2, Pectin acetyl esterase.
 RL: BUU (Biological use, unclassified); NUU (Other use, unclassified); BIOL (Biological study); USES (Uses)
 (enzymic compn. contg. cellulase and; cloning and gene sequence of novel endoglucanases from *Cellvibrio mixtus* and *C. gilvus*)

IT 204338-42-1P 204338-44-3P 204338-47-6P 204338-48-7P 204338-50-1P
 204338-52-3P
 RL: BPN (Biosynthetic preparation); PRP (Properties); BIOL (Biological study); PREP (Preparation)
 (nucleotide sequence; cloning and gene sequence of novel endoglucanases from *Cellvibrio mixtus* and *C. gilvus*)

L38 ANSWER 24 OF 31 HCAPLUS COPYRIGHT 2002 ACS
 AN 1998:126326 HCAPLUS
 DN 128:169015

TI Detergent compositions comprising pectin lyase
 IN Herbots, Ivan Maurice Alfons Jan; Baeck, Andre Cesar
 PA Procter & Gamble Company, USA; Herbots, Ivan Maurice Alfons Jan; Baeck, Andre Cesar
 SO PCT Int. Appl., 93 pp.
 CODEN: PIXXD2

DT Patent

LA English

IC ICM C11D003-386

CC 46-5 (Surface Active Agents and Detergents)

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 9806807	A1	19980219	WO 1996-US12961	19960809
	W: AL, AM, AT, AU, AZ, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, HU, IL, IS, JP, KE, KG, KP, KR, KZ, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, TJ, TM, TR, TT, UA, UG, US, UZ, VN, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
	RW: KE, LS, MW, SD, SZ, UG, AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG				
	AU 9667698	A1	19980306	AU 1996-67698	19960809
	EP 925345	A1	19990630	EP 1996-928107	19960809
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, PT, IE, FI				
	CN 1229429	A	19990922	CN 1996-180454	19960809
	JP 2000500814	T2	20000125	JP 1998-509649	19960809
PRAI	WO 1996-US12961		19960809		

AB Dishwashing, hard surface cleaning and laundry detergent compns. contain a pectin lyase enzyme, esp. an alk.

pectin lyase substantially free of other pectic enzymes for improving overall cleaning performance and stain/soil removal benefits, in particular removal of body, plant, dried-on fruit and vegetables juice soils/stains.

ST detergent compn pectin lyase enzyme; laundry detergent alk pectin lyase; dishwashing detergent pectin lyase; cleaner hard surface pectin lyase

IT Fabric softeners (detergent and fabric softener compns. comprising pectin lyase enzyme)

IT Laundry detergents (detergent compns. comprising pectin lyase enzyme)

IT Detergents (hard-surface cleaners; detergent compns. comprising pectin lyase enzyme)

IT Dishwashing detergents (laundry and dishwashing detergent compns. comprising pectin lyase enzyme)

IT 25751-21-7, Acrylic acid-methacrylic acid copolymer
 RL: MOA (Modifier or additive use); TEM (Technical or engineered material use); USES (Uses)
 (480N; detergent compns. comprising pectin lyase enzyme and)

IT 9033-35-6, Pectin lyase
 RL: BUU (Biological use, unclassified); MOA (Modifier or additive use); BIOL (Biological study); USES (Uses)
 (alk.; detergent compns. comprising pectin lyase enzyme)

IT 9000-92-4, Amylase 9001-62-1, Lipase 9001-92-7, Protease 9012-54-8,
Cellulase
RL: BUU (Biological use, unclassified); MOA (Modifier or additive use);
BIOL (Biological study); USES (Uses)
(detergent compns. comprising pectin lyase
enzyme and)

IT 10332-33-9, Sodium perborate monohydrate 15630-89-4, Sodium
percarbonate 37244-98-7
RL: TEM (Technical or engineered material use); USES (Uses)
(detergent compns. comprising pectin lyase
enzyme and)

IT 9045-81-2, Poly(vinylpyridine N-oxide)
RL: MOA (Modifier or additive use); TEM (Technical or engineered material
use); USES (Uses)
(dye transfer inhibitor; detergent compns. comprising
pectin lyase enzyme and)

L38 ANSWER 25 OF 31 HCAPLUS COPYRIGHT 2002 ACS

AN 1998:794818 HCAPLUS

DN 130:106926

TI Pullulanase mutants of *Bacillus* strain KSM-AP1378 for preparation of
detergents and starch-saccharifying agents

IN Sumitomo, Nobuyuki; Hatada, Yuji; Ichimura, Takashi; Saito, Kazuhiro;
Kawai, Shuji; Ito, Susumu

PA Kao Corp., Japan

SO Jpn. Kokai Tokkyo Koho, 19 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

IC ICM C12N015-09

ICS C07H021-04; C11D003-386; C11D007-42; C12N001-21; C12N009-00;
C12N009-44; C12N015-09; C12R001-07; C12R001-19

CC 7-2 (Enzymes)

Section cross-reference(s): 3, 10, 17, 46

FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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PI JP 10327868 A2 19981215 JP 1997-141596 19970530

AB Prepn. of mutants of pullulanase of *Bacillus* strain KSM-AP1378 by deletion
or substitution mutation at 443-Met and/or 557-Ala to improved their
resistance to oxidizing agents; and use of the mutants for the prepn. of
detergents and starch-saccharifying agents are described. The
pullulanase is derived from the domain 1023-Met.apprx.1820-Asp of the
1938-amino-acid amylopullulanase of *Bacillus* strain KSM-AP1378. Prepn. of
single mutants M443A, M443E, M443I, M443L, M443N, M443R, M443S, and M443V;
prepn. of double mutants such as M443L/A557C; their stability in the
presence of H2O2; and the washing ability of a detergent compn.
contg. them were also shown. Also claimed are the detergent and
saccharifying agents contg. the pullulanase mutants and other enzymes such
as .alpha.-amylase, glucoamylase, etc.

ST *Bacillus* pullulanase mutant oxidant resistance; detergent
saccharifying agent *Bacillus* pullulanase mutant

IT Protein sequences

(of pullulanase mutants of *Bacillus* strain KSM-AP1378)

IT Deletion (mutation)

Substitution (mutation)

(prepn. of pullulanase mutants of *Bacillus* strain KSM-AP1378 resistant
to oxidizing agents by)

IT *Bacillus* (bacterium genus)

Detergents

Saccharification

(pullulanase mutants of *Bacillus* strain KSM-AP1378 for prepn. of detergents and starch-saccharifying agents)

IT Oxidizing agents
 (pullulanase mutants of *Bacillus* strain KSM-AP1378 resistant to)

IT 125498-73-9, Amylopullulanase
 RL: BSU (Biological study, unclassified); BUU (Biological use, unclassified); BIOL (Biological study); USES (Uses)
 (Alk.; pullulanase mutants of *Bacillus* strain KSM-AP1378 derived from)

IT 219674-04-1P 219674-05-2P 219674-08-5P 219674-09-6P 219674-11-0P
 219674-12-1P 219674-13-2P 219674-14-3P
 RL: BPN (Biosynthetic preparation); CAT (Catalyst use); NUU (Other use, unclassified); PRP (Properties); BIOL (Biological study); PREP (Preparation); USES (Uses)
 (amino acid sequence; pullulanase mutants of *Bacillus* strain KSM-AP1378 for prepn. of detergents and starch-saccharifying agents)

IT 9000-90-2, .alpha.-Amylase 9001-05-2, Catalase 9001-42-7, Maltase 9001-62-1, Lipase 9001-92-7, Protease 9003-99-0, Peroxidase 9012-54-8, Cellulase 9023-92-1, Proto pectinase 9032-08-0, Glucoamylase 9032-75-1, Pectinase 9033-35-6, Pectin lyase 9067-73-6, Isoamylase 80498-15-3, Laccase 119632-58-5, Neopullulanase
 RL: CAT (Catalyst use); NUU (Other use, unclassified); USES (Uses)
 (detergent or saccharifying agent compn. contg. *Bacillus* pullulanase mutants and)

IT 9075-68-7P, Pullulanase
 RL: BPN (Biosynthetic preparation); CAT (Catalyst use); NUU (Other use, unclassified); PRP (Properties); BIOL (Biological study); PREP (Preparation); USES (Uses)
 (pullulanase mutants of *Bacillus* strain KSM-AP1378 for prepn. of detergents and starch-saccharifying agents)

L38 ANSWER 26 OF 31 WPIX COPYRIGHT 2002 DERWENT INFORMATION LTD
 AN 1997-192920 [17] WPIX
 DNC C1997-061747

TI Selection of enzymes for use in detergents - using a phage display system in a detergent compsn. which has a negative impact on enzyme activity.

DC D16 D25

IN BJORNVAD, M E; DIDERICHSEN, B; MARKWARDSEN, P; MIKKELSEN, F

PA (NOVO) NOVO-NORDISK AS; (NOVO) NOVO NORDISK AS

CYC 74

PI WO 9709446 A1 19970313 (199717)* EN 24p C12Q001-25
 RW: AT BE CH DE DK EA ES FI FR GB GR IE IT KE LS LU MC MW NL OA PT SD
 SE SZ UG
 W: AL AM AT AU AZ BB BG BR BY CA CH CN CU CZ DE DK EE ES FI GB GE HU
 IL IS JP KE KG KP KR KZ LC LK LR LS LT LU LV MD MG MK MN MW MX NO
 NZ PL PT RO RU SD SE SG SI SK TJ TM TR TT UA UG US UZ VN
 AU 9667854 A 19970327 (199729) C12Q001-25
 EP 854933 A1 19980729 (199834) EN C12Q001-25
 R: AT BE CH DE DK ES FI FR GB GR IE IT LI NL PT SE
 CN 1196094 A 19981014 (199909) C12Q001-25
 JP 11511977 W 19991019 (200001) 27p C12N015-09
 US 6194183 B1 20010227 (200114) C12N009-99

ADT WO 9709446 A1 WO 1996-DK368 19960904; AU 9667854 A AU 1996-67854 19960904;
 EP 854933 A1 EP 1996-928355 19960904, WO 1996-DK368 19960904; CN 1196094 A
 CN 1996-196801 19960904; JP 11511977 W WO 1996-DK368 19960904, JP
 1997-510783 19960904; US 6194183 B1 Cont of WO 1996-DK368 19960904, US
 1998-17612 19980202

FDT AU 9667854 A Based on WO 9709446; EP 854933 A1 Based on WO 9709446; JP

11511977 W Based on WO 9709446
 PRAI DK 1995-988 19950907
 REP 2.Jnl.Ref; WO 9522615
 IC ICM C12N009-99; C12N015-09; C12Q001-25
 ICS C11D003-386; C12N009-00; C12N009-20; C12N009-50; C12N011-16;
 C12Q001-02; C12Q001-37; C12Q001-44; C12Q001-70
 ICA C12N001-21
 ICI C12N001-21, C12R001:19
 AB WO 9709446 A UPAB: 19970424

A new method of selecting enzymes or especially enzyme variants suitable for use in **detergents** is claimed, where the enzyme variants to be selected are in a mixture of enzyme variants which are each displayed on the surface of cells or phage particles, comprises: (a) introducing the mixture into a **detergent** composition in fluid form under conditions (e.g. high or low temperatures) that will inactivate, or have a negative impact on the activity of, most of the enzyme variants; (ii) reacting the mixture with a catcher molecule that will bind specifically only to enzyme variants that exhibit the property sought for, to form a complex between the cell or phage displayed enzyme variant and the catcher; (c) separating the complex from the remaining parts of the mixture; (d) dissociating the complex to isolate such cell(s) or phage(s) that displayed the enzyme variant; (e) introducing the phage into a host where it will multiply, or cultivating the cell under conditions conducive to its multiplication; and (f) isolating a DNA molecule coding for the enzyme variant from the genome of the cell or phage. Also claimed are: (1) an enzyme selected using the above method; and (2) a **detergent** composition comprising an enzyme selected using the above method.

USE - The methods can be used for selecting variants of enzymes having bleaching properties such as proteases, cellulases, amylases, **lyases**, xylanases, pectinases, polygalacturonases, oxidases, laccases, oxidoreductases, transglutaminases, galactosidases, phytases or **peroxidases** for use in **detergents**.

Dwg.0/1

FS CPI
 FA AB
 MC CPI: D05-H09; D11-A; D11-B01A; D11-B02

L38 ANSWER 27 OF 31 WPIX COPYRIGHT 2002 DERWENT INFORMATION LTD
 AN 1997-347460 [32] WPIX

DNC C1997-111924

TI Stabilisation of enzymes - comprises adding ectoin to enzymes e.g. oxidoreductase.

DC B04 D13 D16 D25 E13 F06

PA (DAIN) DAINIPPON PHARM CO LTD

CYC 1

PI JP 09143167 A 19970603 (199732)* 5p C07D239-06

ADT JP 09143167 A JP 1995-323801 19951117

PRAI JP 1995-323801 19951117

IC ICM C07D239-06

ICS C12N009-96

AB JP 09143167 A UPAB: 19970806

Stabilisation of enzymes comprises adding ectoin to the enzymes. The enzymes are amylase, lipase, cellulase, and protease. The enzyme is in solution.

Ectoin, 1,4,5,6-tetrahydro-2-methyl-4 -pyrimidine carboxylic acid, is produced by a halophile, e.g. Halomonas sp. KS-3 (FERM BP-4841), by incubation.

USE - The method can stabilise oxidoreductase (e.g. **peroxidase**), transferase (e.g. glucanotransferase), **lyase** (e.g. **pectin lyase**), isomerase (e.g. glucose

isomerase), synthetase (e.g.. glutamine synthase), and hydrolase (e.g. lipase), isolated from animals, plants or microorganisms, particularly amylase, lipase, cellulase, protease. The method can be utilised in fields of foods, detergents, diagnostics or textile industry.

ADVANTAGE - The enzyme solutions can be preserved for a long time. Enzyme activity is maintained. Thermal stability is increased in thermally unstable enzymes, so they can be used at a higher temperature than 55 degrees C at which temperature putrefaction by microorganisms can be avoided. The method can be effected in a simple and conventional manner.

In an example, stabilisation of an alpha-amylase solution: Alpha-amylase (bacterium origin) was dissolved in water (treated with an ion exchange resin) at 50 mcg/ml concentration. There was added ectoin so as to be 10% (w/v) and the mixture was kept at 37 degrees C. The enzyme activity was determined from time-to-time using soluble starch by the Somogyi-Nelson method (J.Biol.Chem., 153, 375 (1944); J.Biol.Chem., 195, 19 (1952)). Figure 1 shows the result, wherein x-axis indicates days, y-axis enzyme activity (%) remaining, black square 10% ectoin-added solution, and black circle no addition of ectoin.

Dwg.1/5

FS CPI
 FA AB; GI; DCN
 MC CPI: B04-L05B; B04-L05C; B07-D12; B11-C; D03-H01Q; D05-A02; D05-H09;
 D11-B02; E07-D04D; F01-H06; F03-J03
 L38 ANSWER 28 OF 31 HCAPLUS COPYRIGHT 2002 ACS
 AN 1996:718350 HCAPLUS
 DN 126:3771
 TI Mol. screening and PCR cloning of novel endoglucanases from fungi for use as detergents, textile treatment, and paper pulp processing
 IN Schuelein, Martin; Andersen, Lene Nonboe; Lassen, Soeren Flensted; Kauppinen, Markus Sakari; Lange, Lene; Nielsen, Ruby Iium; Ihara, Michiko; Takagi, Shinobu
 PA Novo Nordisk A/s, Den.
 SO PCT Int. Appl., 406 pp.
 CODEN: PIXXD2
 DT Patent
 LA English
 IC ICM C12N009-42
 ICS C11D003-386; D06M016-00
 CC 7-2 (Enzymes)
 Section cross-reference(s): 3, 40, 43, 46

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 9629397	A1	19960926	WO 1996-DK105	19960318
	W: AL, AM, AT, AU, AZ, BB, BG, BR, BY, CA, CH, CN, CZ, DE, DK, EE, ES, FI, GB, GE, HU, IS, JP, KE, KG, KP, KR, KZ, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI				
	RW: KE, LS, MW, SD, SZ, UG, AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN				
	CA 2214116	AA	19960926	CA 1996-2214116	19960318
AU	9649394	A1	19961008	AU 1996-49394	19960318
AU	715423	B2	20000203		
EP	815209	A1	19980107	EP 1996-905762	19960318
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, PT, IE, FI				
CN	1182451	A	19980520	CN 1996-193494	19960318
BR	9607646	A	19980616	BR 1996-7646	19960318
JP	11502701	T2	19990309	JP 1996-527993	19960318
US	6001639	A	19991214	US 1996-651136	19960521

PRAI	DK 1995-272	19950317
	DK 1995-885	19950808
	DK 1995-886	19950808
	DK 1995-887	19950808
	DK 1995-888	19950808
	DK 1996-137	19960212
	WO 1996-DK105	19960318
OS	MARPAT 126:3771	
AB	<p>Cellulolytic enzymes (endoglucanases, cellulases) were isolated from such fungi as <i>Myceliophthora thermophila</i>, <i>Acremonium</i>, <i>Thielavia terrestris</i>, <i>Macrophomina phaseolina</i>, <i>Crinipellis scabella</i>, <i>Volutella colletotrichoides</i>, and <i>Sordaria fimicola</i>. The cDNAs for the enzymes were isolated characterized by mol. screening and PCR cloning using degenerate, deoxyinosine-contg. oligonucleotide primers corresponding to 4 highly conserved amino acid regions found in known amino acid sequences, and DNA constructs contg. the cDNAs were used to express the enzymes in transformed <i>Aspergillus oryzae</i> or <i>A. niger</i>. The enzyme preps. consist essentially of an enzyme having cellulolytic activity and comprise a first amino acid sequence of 14 residues having the sequence Thr-Arg-X3-X4-Asp-Cys-Cys-X8-X9-X10-Cys-X12-Trp-X14, in which X3 and X4 independently is Trp, Tyr or Phe; X8 is Arg, Lys or His; each of X9, X10, X12 and X13 is any of the 20 naturally occurring amino acid residues; and a second amino acid sequence of 5 residues having the sequence Trp-Cys-Cys-XX4-Cys in which XX4 is any of the 20 naturally occurring amino acid residues with the proviso that, in the first amino acid sequence, (i) when X12 is Ser, then X14 is not Ser, and (ii) when X12 is Gly, then X14 is not Ala. Gene fusions were also constructed between endoglucanases from <i>Myceliophthora thermophila</i>, <i>Macrophomina phaseolina</i>, and <i>Crinipellis scabella</i> and the linker/cellulose-binding C-terminal region of the endoglucanase from <i>Humicola insolens</i>. The enzymes perform excellently in detergent, laundering, textile, and papermaking pulp applications. PCR-facilitated detection of cellulolytic enzymes and their cDNA sequences are also described from 46 filamentous and monocentric fungi representing 32 genera.</p>	
ST	endoglucanase cDNA cloning sequence fungi; cellulase cDNA cloning sequence fungi; detergent endoglucanase fungi; textile treatment endoglucanase fungi; paper pulp processing endoglucanase fungi	
IT	<p>Enzymes, properties RL: BPN (Biosynthetic preparation); NUU (Other use, unclassified); PRP (Properties); BIOL (Biological study); PREP (Preparation); USES (Uses) (cellulolytic; mol. screening and PCR cloning of novel endoglucanases from fungi for use as detergents, textile treatment, and paper pulp processing)</p>	
IT	<p><i>Aspergillus</i> <i>Aspergillus niger</i> <i>Aspergillus oryzae</i> <i>Escherichia coli</i> <i>Eukaryote (Eukaryotae)</i> <i>Fusarium</i> <i>Fusarium graminearum</i> <i>Saccharomyces cerevisiae</i> <i>Trichoderma</i> <i>Yeast</i> (cloning hosts; mol. screening and PCR cloning of novel endoglucanases from fungi for use as detergents, textile treatment, and paper pulp processing)</p>	
IT	Cell wall (microbial)	
	Plant tissue	
	(degrdn.; mol. screening and PCR cloning of novel endoglucanases from fungi for use as detergents , textile treatment, and paper	

IT pulp processing)
IT Surfactants
(detergent prepns. contg.; mol. screening and PCR cloning of novel endoglucanases from fungi for use as **detergents**, textile treatment, and paper pulp processing)
IT Quaternary ammonium compounds, uses
RL: NUU (Other use, unclassified); USES (Uses)
(detergent prepns. contg.; mol. screening and PCR cloning of novel endoglucanases from fungi for use as **detergents**, textile treatment, and paper pulp processing)
IT Plasmids
(expression vectors; mol. screening and PCR cloning of novel endoglucanases from fungi for use as **detergents**, textile treatment, and paper pulp processing)
IT Genetic vectors
(expression; mol. screening and PCR cloning of novel endoglucanases from fungi for use as **detergents**, textile treatment, and paper pulp processing)
IT cDNA sequences
(for endoglucanases from fungi for use as **detergents**, textile treatment, and paper pulp processing)
IT Fungi
(hymenomycetous; mol. screening and PCR cloning of novel endoglucanases from fungi for use as **detergents**, textile treatment, and paper pulp processing)
IT Acremonium
Agaricaceae
Agaricales
Aphylophorales
Ariosordaria
Archiascomycetes
Ascobolaceae
Ascobolus
Ascobolus stictoides
Auriculariales
Bjerkanderaceae
Blastocladiales
Cellulose pulp
Ceratostomaceae
Chaetomiaceae
Chaetomium
Chaetomium brasiliense
Chaetomium cuniculorum
Chaetomium murorum
Chaetomium virescens
Chaetostylum
Chaetostylum fresenii
Chytridiales
Chytridiomycota
Cladorrhinum foecundissimum
Colletotrichum
Corynascus thermophilus
Crinipellis
Crinipellis scabella
Cucurbitariaceae
Cylindrocarpon
Detergents
Diaporthales
Diaporthe
Diaporthe syngenesia

Diplodia
Diplodia gossypina
Discomycetes
Dothideales
Eurotiales
Exidia
Exidia glandulosa
Exidiaceae
Fabrics
Fomes
Fomes fomentarius
Fungi
Fusarium anguoides
Fusarium lycopersici
Fusarium oxysporum passiflorae
Fusarium poae
Fusarium solani
Gliocladium
Gliocladium catenulatum
Glomerella cingulata orbiculare
Hemiascomycetes
Humicola grisea
Humicola insolens
Humicola nigrescens
Hypocreaceae
Lasiosphaeriaceae
Loculoascomycetes
Macrohomina
Macrohomina phaseolina
Microorganism
Microsphaeropsis
Molecular cloning
Mucoraceae
Myceliophthora
Myceliophthora thermophila
Nectria
Nectria pinea
Nigrospora
Nodulisporium
Nucleic acid hybridization
PCR (polymerase chain reaction)
Panaeolus
Penicillium
Penicillium chrysogenum
Penicillium verruculosum
Pezizales
Phycomyces
Phycomyces nitens
Phyllachoraceae
Phyllachorales
Plectomycetes
Polyporaceae
Poronia
Poronia punctata
Rhizomucor
Rhizomucor pusillus
Rhizophlyctis
Rhizophlyctis rosea
Rhytismatales
Saccobolus

Saccobolus dilutellus
Schizophyllaceae
Schizophyllum (fungus)
Scytalidium
Scytalidium thermophilum
Softening agents
Sordaria
Sordaria fimicola
Sordaria macrospora
Sordariaceae
Spizellomycetaceae
Spizellomycetales
Spongipellis
Syspastospora
Syspastospora boninensis
Thamnidiaeae
Thermomyces
Thermomyces verrucosus
Thielavia
Thielavia terrestris
Trametes
Trichocomaceae
Tricholomataceae
Trichosphaeriales
Ulospora
Ulospora bilgramii
Valsaceae
Volutella
Volutella colletotrichoides
Xylaria
Xylaria hypoxylon
Xylariaceae
Xylariales
Zygomycota

(mol. screening and PCR cloning of novel endoglucanases from fungi for use as **detergents**, textile treatment, and paper pulp processing)

IT Genes (microbial)

RL: BPN (Biosynthetic preparation); PRP (Properties); BIOL (Biological study); PREP (Preparation)

(mol. screening and PCR cloning of novel endoglucanases from fungi for use as **detergents**, textile treatment, and paper pulp processing)

IT Antibodies

RL: BSU (Biological study, unclassified); BIOL (Biological study)

(mol. screening and PCR cloning of novel endoglucanases from fungi for use as **detergents**, textile treatment, and paper pulp processing)

IT Protein sequences

(of endoglucanases from fungi for use as **detergents**, textile treatment, and paper pulp processing)

IT Oligodeoxyribonucleotides

RL: ARG (Analytical reagent use); ANST (Analytical study); USES (Uses) (primers; mol. screening and PCR cloning of novel endoglucanases from fungi for use as **detergents**, textile treatment, and paper pulp processing)

IT 183628-39-9 183628-40-2 183628-41-3 183628-42-4

RL: ARG (Analytical reagent use); ANST (Analytical study); USES (Uses) (PCR primer; mol. screening and PCR cloning of novel endoglucanases from fungi for use as **detergents**, textile treatment, and

paper pulp processing)

IT 183599-47-5P 183599-49-7P 183599-51-1P 183599-53-3P 183599-55-5P
 183599-57-7P 183599-59-9P 183599-61-3P 183599-63-5P 183599-65-7P
 183599-67-9P 183599-69-1P 183599-71-5P
 RL: BPN (Biosynthetic preparation); NUU (Other use, unclassified); PRP (Properties); BIOL (Biological study); PREP (Preparation); USES (Uses) (amino acid sequence; mol. screening and PCR cloning of novel endoglucanases from fungi for use as **detergents**, textile treatment, and paper pulp processing)

IT 183476-44-0 183476-45-1 183476-46-2 183476-47-3 183476-48-4
 183599-74-8 183681-10-9 183681-11-0 183681-15-4 183681-26-7
 183681-27-8 183681-29-0 183681-30-3 183681-31-4 183681-32-5
 183681-33-6 183681-34-7 183681-35-8 183681-36-9, Cellulase (Phycomyces nitens fragment) 183681-37-0 183681-38-1, Cellulase (Coniothecium fragment) 183681-39-2 183681-40-5 183681-41-6
 183681-42-7 183681-43-8
 RL: PRP (Properties) (amino acid sequence; mol. screening and PCR cloning of novel endoglucanases from fungi for use as **detergents**, textile treatment, and paper pulp processing)

IT 183476-49-5P 183476-50-8P 183476-51-9P
 RL: BPN (Biosynthetic preparation); NUU (Other use, unclassified); PRP (Properties); BIOL (Biological study); PREP (Preparation); USES (Uses) (conserved peptide domain; mol. screening and PCR cloning of novel endoglucanases from fungi for use as **detergents**, textile treatment, and paper pulp processing)

IT 9000-92-4, Amylase 9001-62-1, Lipase 9001-92-7, Proteinase 9003-99-0, Peroxidase 9015-75-2, Pectate lyase 9025-98-3, Pectin methylesterase 9032-75-1, Polygalacturonase 9033-35-6, Pectin lyase 37278-89-0, Xylanase 37325-54-5, Arabanase 37329-65-0, Cellobiohydrolase 39346-28-6, Galactanase 51377-41-4, Cutinase 80146-85-6, Transglutaminase 80498-15-3, Laccase 131384-64-0, Rhamnogalacturonase 132965-81-2, Pectinacetylesterase
 RL: NUU (Other use, unclassified); USES (Uses) (enzyme compns. contg.; mol. screening and PCR cloning of novel endoglucanases from fungi for use as **detergents**, textile treatment, and paper pulp processing)

IT 9012-54-8P, Cellulase 74191-29-0P, Endoglucanase
 RL: BPN (Biosynthetic preparation); NUU (Other use, unclassified); PRP (Properties); BIOL (Biological study); PREP (Preparation); USES (Uses) (mol. screening and PCR cloning of novel endoglucanases from fungi for use as **detergents**, textile treatment, and paper pulp processing)

IT 183599-44-2P 183599-46-4P 183599-48-6P 183599-50-0P 183599-52-2P
 183599-54-4P 183599-56-6P 183599-58-8P 183599-62-4P 183599-64-6P
 183599-66-8P 183599-68-0P 183599-70-4P
 RL: BPN (Biosynthetic preparation); PRP (Properties); BIOL (Biological study); PREP (Preparation) (nucleotide sequence; mol. screening and PCR cloning of novel endoglucanases from fungi for use as **detergents**, textile treatment, and paper pulp processing)

IT 183599-60-2 183599-72-6 183599-73-7 183599-75-9 183599-76-0
 183599-77-1 183599-78-2 183599-79-3 183599-80-6 183599-81-7
 183599-82-8 183599-83-9 183599-84-0 183599-85-1 183599-86-2
 183599-87-3 183599-88-4 183599-89-5 183599-90-8 183599-91-9
 183599-92-0 183599-93-1 183599-94-2 183599-95-3 183599-96-4
 183599-97-5
 RL: PRP (Properties) (nucleotide sequence; mol. screening and PCR cloning of novel

endoglucanases from fungi for use as detergents, textile treatment, and paper pulp processing)

L38 ANSWER 29 OF 31 HCPLUS COPYRIGHT 2002 ACS
 AN 1996:456128 HCPLUS
 DN 125:108882
 TI Enzyme preparations with cellulolytic activity from basidiomycetous fungi
 IN Lange, Lene; Nielsen, Jack Bech; Schuelein, Martin
 PA Novo Nordisk A/s, Den.
 SO PCT Int. Appl., 68 pp.
 CODEN: PIXXD2
 DT Patent
 LA English
 IC ICM C12N009-42
 ICS C11D003-386; D06M016-00; D21C009-00; C12S003-08; C12S011-00
 CC 7-2 (Enzymes)
 Section cross-reference(s): 40, 43, 46
 FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 9619570	A1	19960627	WO 1995-DK518	19951222
	W: AL, AM, AT, AU, BB, BG, BR, BY, CA, CH, CN, CZ, DE, DK, EE, ES, FI, GB, GE, HU, IS, JP, KE, KG, KP, KR, KZ, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK				
	RW: KE, LS, MW, SD, SZ, UG, AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG				
	AU 9642987	A1	19960710	AU 1996-42987	19951222
	EP 799307	A1	19971008	EP 1995-941608	19951222
	R: DE, DK, FR, GB, NL				
	JP 10511410	T2	19981104	JP 1995-519439	19951222
	US 5972872	A	19991026	US 1997-870996	19970606
PRAI	DK 1994-1471		19941222		
	WO 1995-DK518		19951222		
AB	Enzyme prepns. with substantial cellulolytic activity, esp. endoglucanase activity, at alk. conditions are provided which are relatively stable in the presence of surfactants (linear alkylbenzenesulfonate) and at high temp. (50.degree. for 1 h). The enzymes are derived from or producible by a fungus selected from the Basidiomycetous families Coprinaceae and Bolbitiaceae, preferably from the group of strains belonging to the genera Psathyrella, Podaxis, Panaeolus, Coprinus, and Bolbitius. The enzyme prepns. may be useful in a detergent compn., a fabric softener compn. for textile treatment, for providing a stone-washed look of dyed cellulosic fabric, improving the drainage of paper pulp, or the de-inking of recycled paper.				
ST	cellulolytic enzyme basidiomycetous fungi detergent paper; endoglucanase basidiomycetous fungi detergent paper				
IT	Paper (de-inking; enzyme prepns. with cellulolytic activity from basidiomycetous fungi)				
IT	Antioxidants Bleaching agents				
	Perfumes				
	Pigments				
	Sequestering agents				
	Solubilizers (detergent compns. contg. enzymes and; enzyme prepns. with cellulolytic activity from basidiomycetous fungi)				
IT	Salts, uses				

RL: NUU (Other use, unclassified); USES (Uses)
(detergent compns. contg. enzymes and; enzyme preps. with cellulolytic activity from basidiomycetous fungi)

IT Agaricaceae
Bolbitiaceae
Bolbitius
Bolbitius aleuriatus
Coprinus
Coprinus cinereus
Coprinus disseminatus
Coprinus domesticus
Coprinus ephemerus
Coprinus friesii
Coprinus micaceus
Coprinus picaceus
Coprinus radians
Coprinus subimpatiens
Detergents
Panaeolus
Panaeolus semiovatus
Podaxis
Podaxis pistillaris
Psathyrella
Psathyrella candolleana
Psathyrella prona
Pulp, cellulose
Textiles
(enzyme preps. with cellulolytic activity from basidiomycetous fungi)

IT Surfactants
(enzyme stability in presence of; enzyme preps. with cellulolytic activity from basidiomycetous fungi)

IT Softening agents
(for textiles; enzyme preps. with cellulolytic activity from basidiomycetous fungi)

IT Sulfonic acids, uses
RL: NUU (Other use, unclassified); USES (Uses)
(1-alkene, sodium salts, enzyme stability in presence of; enzyme preps. with cellulolytic activity from basidiomycetous fungi)

IT Sulfonic acids, uses
RL: NUU (Other use, unclassified); USES (Uses)
(alkane, sodium salts, enzyme stability in presence of; enzyme preps. with cellulolytic activity from basidiomycetous fungi)

IT Polyoxyalkylenes, uses
RL: NUU (Other use, unclassified); USES (Uses)
(alkyl- and sulfo-terminated, sodium salts, enzyme stability in presence of; enzyme preps. with cellulolytic activity from basidiomycetous fungi)

IT Quaternary ammonium compounds, uses
RL: NUU (Other use, unclassified); USES (Uses)
(alkylbenzenesulfonates, enzyme stability in presence of; enzyme preps. with cellulolytic activity from basidiomycetous fungi)

IT Fungi
(basidiomycetous, enzyme preps. with cellulolytic activity from basidiomycetous fungi)

IT Enzymes
RL: BAC (Biological activity or effector, except adverse); NUU (Other use, unclassified); BIOL (Biological study); USES (Uses)
(cellulolytic, enzyme preps. with cellulolytic activity from basidiomycetous fungi)

IT Fatty acids, uses

RL: NUU (Other use, unclassified); USES (Uses)
 (sulfo, esters, enzyme stability in presence of; enzyme preps. with cellulolytic activity from basidiomycetous fungi)

IT 9000-92-4, Amylase 9001-62-1, Lipase 9001-92-7, Proteinase 9003-99-0, Peroxidase 9015-75-2, Pectate lyase 9025-98-3, Pectin methylesterase 9032-75-1, Polygalacturonase 9033-35-6, Pectin lyase 37278-89-0, Xylanase 37325-54-5, Arabinanase 37329-65-0, Cellulohydrolase 39346-28-6, Galactanase 51377-41-4, Cutinase 80146-85-6, Transglutaminase 80498-15-3, Laccase 131384-64-0, Rhamnogalacturonase 132965-81-2, Pectin acetyl esterase

RL: NUU (Other use, unclassified); USES (Uses)
 (cellulolytic enzyme preps. contg.; enzyme preps. with cellulolytic activity from basidiomycetous fungi)

IT 74191-29-0, Endoglucanase
 RL: BAC (Biological activity or effector, except adverse); NUU (Other use, unclassified); BIOL (Biological study); USES (Uses)
 (enzyme preps. with cellulolytic activity from basidiomycetous fungi)

IT 151-21-3, Sodium dodecyl sulfate, uses
 RL: NUU (Other use, unclassified); USES (Uses)
 (enzyme stability in presence of; enzyme preps. with cellulolytic activity from basidiomycetous fungi)

L38 ANSWER 30 OF 31 HCPLUS COPYRIGHT 2002 ACS

AN 1996:377223 HCPLUS

DN 125:52369

TI An enzyme and enzyme preparation with endoglucanase activity from Acremonium species

IN Schuelein, Martin; Oxenboell, Karen Margrethe; Andersen, Lene Nonboe; Lassen, Soeren Flensted; Kauppinen, Markus Sakari; Nielsen, Jack Bech

PA Novo Nordisk A/s, Den.

SO PCT Int. Appl., 116 pp.

CODEN: PIXXD2

DT Patent

LA English

IC ICM C12N009-42

ICA C11D003-386; D06M016-00

ICI C12N009-42, C12R001-75

CC 7-2 (Enzymes)

Section cross-reference(s): 3, 40, 43, 46

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 9611262	A1	19960418	WO 1995-DK400	19951006
	W: AL, AM, AT, AU, BB, BG, BR, BY, CA, CH, CN, CZ, DE, DK, EE, ES, FI, GB, GE, HU, IS, JP, KE, KG, KP, KR, KZ, LK, LR, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, TJ				
	RW: KE, MW, SD, SZ, UG, AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG				
	AU 9536045	A1	19960502	AU 1995-36045	19951006
	EP 788541	A1	19970813	EP 1995-933337	19951006
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LI, LU, NL, PT, SE				
	JP 10507073	T2	19980714	JP 1995-512274	19951006
	US 5919691	A	19990706	US 1997-809763	19970320
	US 6071735	A	20000606	US 1997-956253	19971022
PRAI	DK 1994-1160		19941006		
	DK 1994-1296		19941111		
	WO 1995-DK400		19951006		

AB An enzyme compn. with substantial cellulolytic, esp. endoglucanase, activity at alk. conditions is derived from or producible by fungi from the genus Acremonium, and the enzyme compn. is not immunol. cross-reactive with antibodies raised against endoglucanases (EC 3.2.1.4) from *Humicola insolens* DSM 1800, *Fusarium oxysporum* DAM 2672, *Myceliophthora thermophila* CBS 117.65, or *Cephalosporium* sp. RYM-202. Seven cDNA sequences encoding a full-length or partial enzyme exhibiting endoglucanase activity were cloned from *Acremonium* CBS 265.96 and CBS 487.94. DNA construct vectors were constructed for the expression of the enzymes, esp. in *Aspergillus oryzae* or *A. niger* transformants. The enzyme compn. and the isolated or cloned and expressed cellulase of the invention may be useful in any industrial process requiring an alk. cellulase, e.g. for providing localized variation in the color d. of dyed fabric such as stone-washing of denim, for improving the drainage of an aq. suspension of paper pulp, for the de-inking of recycled paper, in **detergent** compns., and in fabric softeners.

ST endoglucanase compn *Acremonium*; cellulase compn *Acremonium*; cDNA sequence cellulase *Acremonium*; paper pulp endoglucanase *Acremonium*; textile endoglucanase *Acremonium*; **detergent** endoglucanase *Acremonium*

IT Oxidation catalysts
Reduction catalysts
(bleaching, **detergent** compn. contg. enzyme compn. and; enzyme and enzyme prepn. with endoglucanase activity from *Acremonium* species for use in)

IT *Aspergillus*
Aspergillus niger
Aspergillus oryzae
Saccharomyces cerevisiae
Trichoderma
Yeast
(cloning host; enzyme and enzyme prepn. with endoglucanase activity from *Acremonium* species)

IT Antioxidants
Perfumes
Pigments
Sequestering agents
Solubilizers
Surfactants
(**detergent** compn. contg. enzyme compn. and; enzyme and enzyme prepn. with endoglucanase activity from *Acremonium* species for use in)

IT Enzymes
RL: NUU (Other use, unclassified); USES (Uses)
(**detergent** compn. contg. enzyme compn. and; enzyme and enzyme prepn. with endoglucanase activity from *Acremonium* species for use in)

IT *Acremonium*
Acremonium acremonium
Acremonium brachypenium
Acremonium dichromosporum
Acremonium furcatum
Acremonium incoloratum
Acremonium obclavatum
Acremonium pinkertoniae
Acremonium roseogriseum
Cephalosporium
Fermentation
Fungi
Molecular cloning
Paecilomyces persicinus
(enzyme and enzyme prepn. with endoglucanase activity from *Acremonium* species)

IT **Detergents**
(enzyme and enzyme prepn. with endoglucanase activity from Acremonium species for use in)

IT **Plasmid and Episome**
(expression vectors; enzyme and enzyme prepn. with endoglucanase activity from Acremonium species)

IT **Pulp, cellulose**
(improved drainage of aq. suspensions of paper pulp; enzyme and enzyme prepn. with endoglucanase activity from Acremonium species for use in)

IT **Textiles**
(improvement of color d. of dyed; enzyme and enzyme prepn. with endoglucanase activity from Acremonium species for use in)

IT **Enzymes**
RL: BPN (Biosynthetic preparation); NUU (Other use, unclassified); PRP (Properties); BIOL (Biological study); PREP (Preparation); USES (Uses)
(cellulolytic, enzyme and enzyme prepn. with endoglucanase activity from Acremonium species)

IT **Deoxyribonucleic acid sequences**
(complementary, for cellulases from Acremonium species)

IT **Fungi**
(filamentous, cloning host; enzyme and enzyme prepn. with endoglucanase activity from Acremonium species)

IT **Paper**
(recycled, deinking; enzyme and enzyme prepn. with endoglucanase activity from Acremonium species for use in)

IT 7782-50-5, **Chlorine, uses**
RL: NUU (Other use, unclassified); USES (Uses)
(detergent compn. contg. enzyme compn. and capturing or reducing agents for; enzyme and enzyme prepn. with endoglucanase activity from Acremonium species for use in)

IT 9012-54-8P, **Cellulase 74191-29-0P, Endoglucanase**
RL: BPN (Biosynthetic preparation); NUU (Other use, unclassified); PRP (Properties); BIOL (Biological study); PREP (Preparation); USES (Uses)
(enzyme and enzyme prepn. with endoglucanase activity from Acremonium species)

IT 9000-92-4, **Amylase 9001-62-1, Lipase 9001-92-7, Protease 9003-99-0, Peroxidase 9015-75-2, Pectate lyase**
9025-98-3, Pectin methylesterase 37278-89-0, Xylanase 37325-54-5, Arabinanase 37329-65-0, Celllobiohydrolase 39346-28-6, Galactanase 51377-41-4, Cutinase 80146-85-6, Transglutaminase 80498-15-3, Laccase 132965-81-2, Pectin acetyl esterase
RL: NUU (Other use, unclassified); USES (Uses)
(enzyme and enzyme prepn. with endoglucanase activity from Acremonium species for use in)

IT 177967-86-1 177967-87-2 177967-88-3 177967-89-4 177967-90-7
177967-91-8 177967-92-9
RL: BUU (Biological use, unclassified); PRP (Properties); BIOL (Biological study); USES (Uses)
(nucleotide sequence; enzyme and enzyme prepn. with endoglucanase activity from Acremonium species)

L38 ANSWER 31 OF 31 WPIX COPYRIGHT 2002 DERWENT INFORMATION LTD
AN 1996-268613 [27] WPIX
DNC C1996-085426
TI Prodn. of self-oligomerising peptide(s) with reduced allergenicity - used in household and personal cleaning prods., and in food and feeds etc..
DC B04 C03 D16
IN BJORNVAD, M E; PRENTON, A; BJORNVAD, M
PA (NOVO) NOVO-NORDISK AS
CYC 68

PI WO 9616177 A1 19960530 (199627)* EN 85p C12N015-62
 RW: AT BE CH DE DK ES FR GB GR IE IT KE LS LU MC MW NL OA PT SD SE SZ
 UG
 W: AL AM AT AU BB BG BR BY CA CH CN CZ DE DK EE ES FI GB GE HU IS JP
 KE KG KP KR KZ LK LR LS LT LU LV MD MG MK MN MW MX NO NZ PL PT RO
 RU SD SE SG SI SK TJ TM TT UA UG US UZ VN
 AU 9539240 A 19960617 (199638) C12N015-62
 EP 793726 A1 19970910 (199741) EN C12N015-62
 R: AT BE CH DE DK ES FR GB GR IE IT LI LU NL PT SE
 JP 10509324 W 19980914 (199847) 89p C12N015-09
 ADT WO 9616177 A1 WO 1995-DK463 19951123; AU 9539240 A AU 1995-39240 19951123;
 EP 793726 A1 EP 1995-936995 19951123; WO 1995-DK463 19951123; JP 10509324
 W WO 1995-DK463 19951123, JP 1996-516467 19951123
 FDT AU 9539240 A Based on WO 9616177; EP 793726 A1 Based on WO 9616177; JP
 10509324 W Based on WO 9616177
 PRAI DK 1994-1343 19941124
 REP WO 9410191; WO 9410308
 IC ICM C12N015-09; C12N015-62
 ICS A01N037-46; A23L001-00; A61K007-00; A61K007-06; A61K007-46;
 A61K007-48; C11D003-386; C12N001-19; C12N001-21; C12N009-00;
 G02C013-00
 ICA D06M015-15
 AB WO 9616177 A UPAB: 19960710
 A novel process for producing a polypeptide with reduced allergenicity
 comprises (a) fermenting a microorganism capable of producing the
 polypeptide, and (b) recovering the polypeptide in substantially pure
 form, where the microorganism is modified in a manner such that the
 polypeptide molecules self-oligomerise. Also claimed are (1) a DNA
 construct (I) for producing polypeptides with reduced antigenicity
 comprising a DNA sequence encoding at least one polypeptide and at least
 one zipper domain operably linked together, (2) a recombinant vector or
 transformation vehicle comprising (I), (3) a cell comprising (I) or the
 vector of (2), (4) a microbially-produced polypeptide with reduced
 allergenicity produced according to the above method.
 USE - The polypeptides produced by this method are pref. enzymes e.g.
 proteases (metallo, acid, neutral or alkaline), lipases, cellulases,
 amylases, **lyases**, xylanases, **pectinases**, pullulanases,
 polygalacturonases, oxidases, lactases, oxidoreductases,
 transglutaminases, alpha-galactosidases, phytases and **peroxidases**
 . The enzyme is esp. Termamyl (RTM). The polypeptides may be used in
 household articles, in **detergents**, including dishwashing
detergents and soap bars, in personal care prods. including oral
 care prods. for cleaning dentures and in dentifrices, in skin care prods.
 including creams and lotions, in hair care or treatment prods. including
 shampoos, in contact lens cleaning prods. and cosmetics. They may also be
 used in pharmaceuticals, agrochemicals and food and feed (all claimed).
 Dwg. 6/6
 FS CPI
 FA AB; GI
 MC CPI: B04-C03; C04-C03; B04-E03F; C04-E03F; B04-E08; C04-E08; B04-F01;
 C04-F01; B04-L05C; C04-L05C; B04-N04; C04-N04; B11-A01; C11-A01;
 D03-A; D03-G; D05-C03B; D05-C03C; D05-C03E; D05-H12C; D05-H12E;
 D05-H14A1; D05-H14A2; D05-H17C; D08-B04; D08-B08; D08-B09A; D11-B02;
 D11-D01C